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Connecticut Medicine

The Journal of the Connecticut State Medical Society

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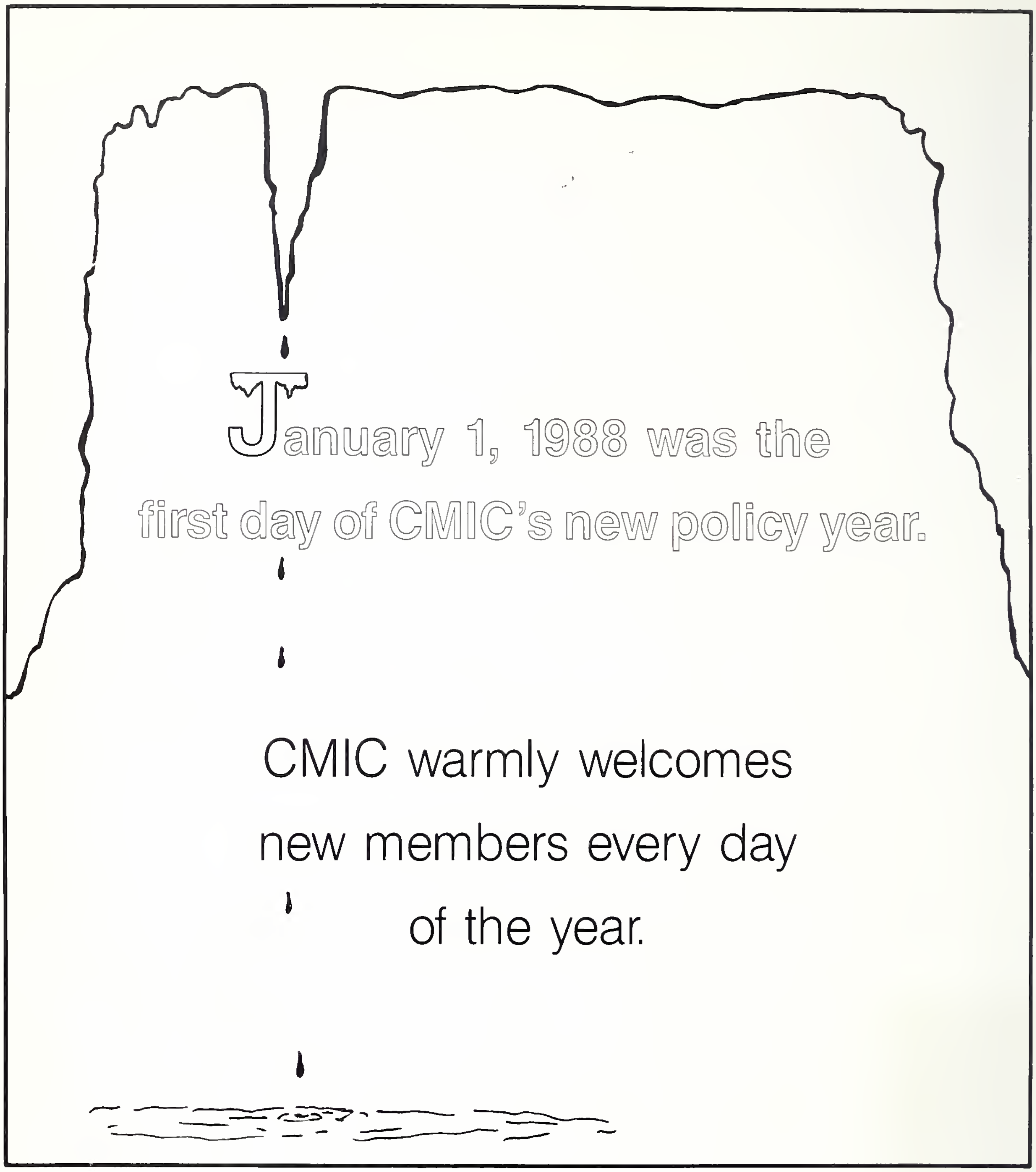

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Gastric Cancer in Connecticut: Outlook for Improved Survival

WALTER E. LONGO, M.D., KARL A. ZUCKER, M.D., MICHAEL J. ZDON, M.D.,
AND IRVIN M. MODLIN, M.D.

ABSTRACT—Despite advances in surgery and adjuvant therapy, the prognosis of gastric cancer remains poor with five-year survivals ranging from 0-10%. In Japan, where gastric cancer is the most prevalent, mass screening programs have reduced the gastric cancer death rate by identifying patients with early gastric cancer which has a 95% five-year survival rate. In an attempt to identify patients with early gastric cancer and to improve survival we retrospectively reviewed all patients with gastric cancer from 1972-1985. Early gastric cancer was identified in 6% (17/302) of all gastric malignancies. Symptoms were virtually indistinguishable from peptic ulcer and other benign diseases. The ability to diagnose patients with early gastric cancer was directly related to the increasing use of flexible endoscopy. We believe that the utilization of the endoscope as the first line diagnostic tool in patients with persistent upper GI tract symptoms may increase the number of patients identified with early gastric cancer and give an outlook of improved survival of gastric neoplasia.

Introduction

In 1930 gastric cancer was the most common visceral malignancy and the most frequent cause of cancer death in the United States.[1] In the past five decades the incidence of this malignancy has declined four-fold.[2] Gastric cancer, however, remains a major health problem with an estimated 25,000 new cases in 1986, and approximately 400 deaths in Connecticut alone. The causes of gastric cancer, as well as any predisposing factors, remain unknown. Despite advances in surgical technique, chemotherapy, and radiotherapy, the prognosis for gastric cancer remains dismal with five-year survival rates ranging from 0 to 10%.[3] This has led many clinicians to adopt a fatalistic approach to the detection and treatment of gastric cancer.

The incidence and prevalence of gastric cancer in Japan is among the highest in the world.[4] This increased prevalence has prompted mass screening programs in an effort to decrease the gastric cancer death rate. Through these mass screenings, a dramatic reduction in the gastric cancer death rate has been seen; this has been largely due to the increased identification of patients with earlier stages of tumor growth.[5] Saeki in 1938 identified a subset of patients whose tumor invasion was limited to mucosa and submucosa irrespective of regional lymph node involvement. He noted that such patients with this limited tumor invasion had five-year survival rates exceeding 90%.[6] The detection of patients with early gastric cancer has increased in Japan from 5% in 1960 to over 30% in 1980 of all patients with gastric cancer. This has resulted in an overall five-year survival increase from less than 10% to approximately 45% over the past 25 years.[7] Although once felt to be unique to Japan, early gastric cancer is being reported with increased frequency in Europe, Canada, and the United States.[8-10]

The purpose of the present study was to determine if a similar group of patients could be identified in our institution. An extensive review of these cases was done in attempts to identify the presenting historical, physical, laboratory, radiologic, or endoscopic findings that distinguished these patients from the general population. It would be assumed that an increased recogntion of such patients in our population would improve the survival of patients with gastric cancer.

Methods

The records of all gastric malignancies at Yale-New Haven Hospital and the West Haven Veterans Administration Hospital from 1972-1985 were reviewed. A total of 302 patients with gastric cancers was identified. Seventeen cases were found to involve only the mucosa and submucosa or both, and were termed early gastric cancer. All charts were reviewed with regard to type and duration of symptoms, physical findings, admission laboratory values, gastrointestinal series, endoscopic findings, biopsy results, type of gastric resection, and recurrence and survival rates.

Results

During the 13-year period from 1972-1985, 302 cases of gastric carcinoma were reported from surgical pathology.

WALTER E. LONGO, M.D., Senior Resident in Surgery, Department of Surgery, West Haven Veterans Administration Medical Center, West Haven, CT and Yale University School of Medicine, New Haven, CT. KARL A. ZUCKER, M.D., Assistant Professor of Surgery, Department of Surgery, Yale University School of Medicine. MICHAEL J. ZDON, M.D., Associate Professor of Surgery, Department of Surgery, Yale University School of Medicine. IRVIN M. MODLIN, M.D., Professor of Surgery, Department of Surgery, Yale University School of Medicine.

Table 1

PRESENTING SYMPTOMS OF ALL PATIENTS WITH GASTRIC CANCER

Presenting Symptoms	*EGC*	*ADV*
Dyspepsia	100%	51%
Early Satiety	18%	58%
GI Tract Blood Loss	24%	15%
Pain	18%	31%
Weight Loss	30%	62%
Mass	0%	20%

In seventeen patients the tumor was confined to the mucosa and submucosa and were termed early gastric cancer. Two hundred and eighty-five patients were found with primary tumors extending beyond the submucosa, and they were classified as advanced gastric cancers. In keeping with the definition of early gastric cancer as defined by the Japanese Gastroenterological Endoscopy Society, the status of the regional nodes was not used as a parameter for this classification. Patients with metastatic disease beyond the regional lymph nodes were designated as advanced gastric cancer.

At presentation, patients with early gastric cancer had an average age of 61 years, with males outnumbering females approximately 2.2:1. This sex distribution, however, is skewed towards the male sex as 95% of the patients in the VA hospital are male. All 17 patients had complained of dyspepsia at some time in their disease course. Five patients (31%) had complained only of abdominal pain. Three patients (20%) had presented with upper gastrointestinal bleeding. Four patients (26%) had complained of both early satiety and weight loss. Four patients (26%) had noted only dyspepsia. One patient's cancer had been discovered during a routine follow-up examination after endoscopic resection of a benign hypertrophic antral polyp one year earlier.

Table 2

LOCATION OF SEVENTEEN EARLY GASTRIC CANCERS

Cardiac	3
Fundus	1
Antrum	11
Remnant	2

Upper gastrointestinal barium studies were performed on 14 of the 17 patients. Ten of these studies were interpreted as normal and four as showing benign gastric ulcers. Sixteen patients underwent esophagogastroduodenoscopy because of persistent symptoms. In all 16 cases the diagnosis of early gastric carcinoma was made and the subsequent surgical pathology of the resected specimen confirmed this diagnosis. One patient with a known history of peptic ulcer disease presented with massive upper gastrointestinal bleeding and underwent an emergency subtotal gastrectomy; the pathology of her resected specimen was that of an early gastric cancer located within the gastric ulcer.

Eleven patients (60%) had their early gastric cancer located in the antrum, and were treated with subtotal gastrectomies. Three patients had their early gastric cancer located in the cardia, one of which was located in a Barrett's esophagus. All three patients had proximal subtotal gastrectomies. One patient had an early gastric cancer located in the gastric fundus, and also underwent a distal subtotal gastrectomy. Two patients had early gastric cancer located in a gastric remnant resulting from a previous resection for peptic ulcer disease; these patients underwent completion total gastrectomies.

All early gastric cancers were adenocarcinomas. Eight patients (45%) had lesions confined to the mucosa. None of the patients with intramucosal lesions had regional lymph node involvement. The remaining nine patients (55%) had lesions that extended into the submucosa. Two of the eight submucosal lesions had regional lymph node involvement. Sixteen of the 17 patients are alive today with a survival of 94% and a mean follow-up of 4.8 years (18 months to 11 years). No patients were lost to follow-up. Our one death, a patient with a submucosal lesion and positive regional lymph node involvement, expired three years after his initial surgery from a malignant aorto-gastric fistula.

Discussion

The mortality rate from stomach cancer is higher in Japan than in any other country in the world. This has prompted mass screening programs in many places in Japan. In 1978, 3.6 million people were screened by a variety of techniques and over 3,500 cases of gastric cancer were detected of which 30% were early gastric cancers.[12] The possibility of a curative stage of gastric cancer has excited the interest of many clinicians outside Japan. Reports of similar survival rates for early gastric cancer have been reported from China, West Germany, United Kingdom, Italy, and Canada (Table 3). In the United States, where the prognosis for gastric cancer remains dismal, there has been very limited experience with early gastric cancer.

Table 3

INTERNATIONAL EXPERIENCE WITH EARLY GASTRIC CANCER

Author	*Country*	*#ECG*	*5-yr Survival*
Koga	Japan	446	91.6%
Murkami	Japan	510	89.6%
Rheault	Canada	64	95.3%
Biasco	Italy	80	85.9%
Gentsch	Germany	113	74.0%
Houghton	UK	90	71.0%

The use of the flexible fiberoptic gastroscope has markedly improved our ability to detect and treat many pathological conditions in the upper gastrointestinal tract.[13] The advantage of direct visualization and biopsy permits precise pathological diagnosis of the esophagus, stomach, and proximal duodenum. Mass screening programs in Japan now predominantly utilize endoscopy and have increased the diagnosis of patients with early gastric cancer from approximately 10% in 1960 (pre-endoscopy era) to 40% in 1985.[14]

Table 4
NATIONAL EXPERIENCE WITH EARLY GASTRIC CANCER

Author	*#ECG*	*% Gastric Cancer*	*5-yr Survival*
Green	28	5.6	68%
Bringaze	15	4.7	65%
Ito	14	8.3	86%
Carter	5	16.0	100%
Goldstein	6	8.5	90%

The staging of gastric cancer in the United States is primarily by the TNM (tumor-nodes-metastises) system which is far different from that utilized by the Japanese. In 1938, Saeki identified a subgroup of patients with gastric cancer which was characterized by a minimal depth of invasion and which is accompanied by a 90% five-year survival, regardless of the presence or absence of regional lymph node involvement.[6] In 1962, the Japanese Gastroenterological Endoscopy Society defined those patients with mucosal or submucosal lesions regardless of regional lymph node involvement as having early gastric cancer, and those patients with disease penetrating the muscularis as having advanced gastric cancer. Examination of the survival rates of all stages of gastric cancer reveals that survival drops off significantly once the tumor penetrates deeper than the submucosa. These observations suggest that survival depends on the depth of invasion at the time of surgery. Gastric cancer is curable when surgery is performed on patients with lesions confined to the mucosa or submucosa, as evidenced by five and ten-year survivals of 97% and 95% in Japan.[15] These increasingly optimistic reports, however, have been the result of an aggressive endoscopic workup of patients both symptomatic and asymptomatic. The combination of fiberoptic endoscopy with multiple biopsy specimens represents the best method for diagnosis of early gastric cancer. Liberal use of endoscopic directed biopsy of suspicious areas is recommended, as in our experience many of these early gastic cancers may mimic benign disease states.

Adequate surgical resection remains the definitive treatment for early gastric cancer. Alternative modes of therapy advocated in Japan include endoscopic polypectomy and Nd-YAG laser treatment[16] which are reserved for those patients who refuse surgery or may not tolerate an extensive surgical procedure.

In our series of patients, the signs and symptoms of gastric cancer were often indistinguishable from those of peptic ulcer disease. At our institution, we have seen a decline in the use of the barium upper gastrointestinal series and an increase in the use of endoscopy in the workup of those patients with symptoms suggesting involvement of the proximal gastrointestinal tract (Figure 1).

The cost of an endoscopic procedure and a barium upper GI series are comparable in our insititution. When one considers that an abnormal barium study is generally followed by endoscopy, it makes even more sense economically to utilize endoscopy as a first-line diagnostic procedure. It has been our experience that a well-trained physician can perform an endoscopic procedure with minimal discomfort to the patient. Esophagogastroduodenoscopy has proven to be more accurate in detecting lesions that may ordinarily be missed on contrast studies. In all but one of our 17 patients with early gastric cancer, a routine upper gastrointestinal series was the first diagnostic modality utilized, and only one study suggested a malignancy. These patients were subsequently referred to the endoscopy service because of the persistence of symptoms; they were found to have early gastric cancer. The average delay in diagnosis among this group was seven months (range 1.7 to 16 months). Unfortunately, we have seen a group of symptomatic patients in whom endoscopy had been delayed many months; at surgical resection they were found to have advanced gastric cancer with lesions extending into the muscularis. How many of these patients may have been diagnosed as having early gastric cancer if a more aggressive approach towards endoscopy had been followed is, of course, unknown.

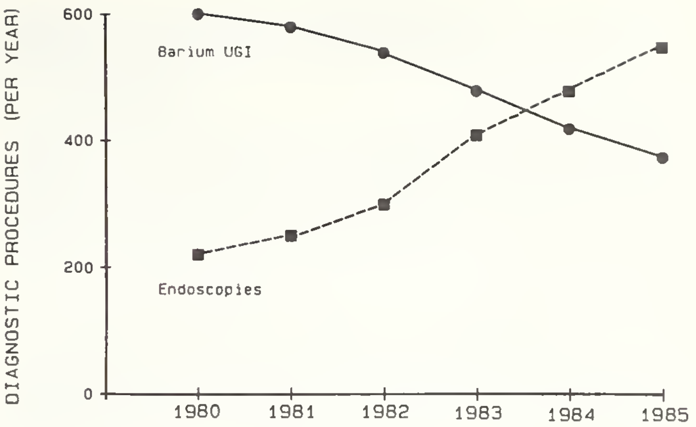

Figure 1

Diagnostic Procedures at the West Haven Veterans Administration Medical Center after the introduction of upper endoscopy. There has been an increase in the number of these procedures and a decrease in the number of barium upper gastrointestinal series.

Conclusions

Early gastric cancer carries a much better prognosis than advanced gastric cancer, and is potentially curable by surgery. Patients with early gastric cancer show a 90% five-year survival rate as compared with those patients having disease invading the muscularis, where five-year survivals are less than 10%. Our challenge today is to identify such patients in a population presenting with symptoms of dyspepsia, heart burn, and other non-specific gastrointestinal complaints. An improved outlook for patients with gastric cancer is possible if more patients with early gastric cancer are identified. We currently recommend that any person over the age of 45 years with a gastrointestinal complaint referrable to the upper tract, and which has persisted for more than six weeks despite appropriate symptomatic treatment, should undergo upper gastrointestinal endoscopy.

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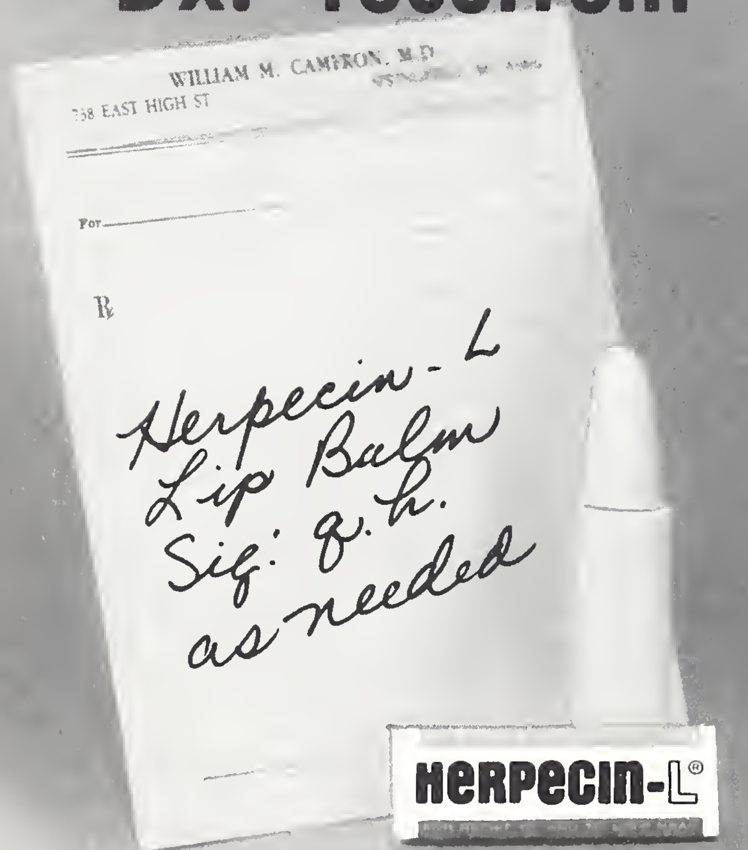
Dx: recurrent herpes labialis



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Clinical Significance of Postoperative Elevation of the Serum Amylase

J. THOMAS CREPPS, JR., M.D. AND JAMES H. FOSTER, M.D.

ABSTRACT—Postoperative pancreatitis is a serious problem that may follow operations on structures both near to and remote from the pancreas. Serum amylase evaluation is often ordered by the wary surgeon anxious to avoid this dreaded complication. Elevated values have prompted changes in management, even in the asymptomatic patient, which prolong the hospital stay. Is this caution warranted, or can the surgeon safely ignore elevated serum amylase values in the absence of clinical signs of pancreatitis?

To answer this straightforward, but apparently as-yet-unanswered question, a prospective evaluation was performed. Postoperative amylase elevation was detected in 19 consecutive asymptomatic patients after a variety of extra- and intraabdominal operations. Two groups of patients were identified according to the number of postoperative days when amylase became elevated: early (before or on the second postoperative day), and late (greater than two days postoperatively). All patients were managed as if the amylase were normal. All patients were advanced to regular diets on the basis of the usual clinical signs appropriate to the type of surgery. No patients experienced clinical signs or symptoms of pancreatitis or worsening of their postoperative course. Pancreatic computed tomography and ultrasonography were performed in five patients, and in all instances these imaging tests were normal. We conclude that the presence of postoperative hyperamylasemia is of no clinical significance in the asymptomatic patient when it is unaccompanied by other findings.

Introduction

Postoperative hyperamylasemia has been noted to occur in our hospital in association with gastroduodenal surgery and biliary tract surgery, but also after operations remote from the pancreas. When associated with signs and symptoms of clinical pancreatitis, intensive medical therapy is indicated to avoid the serious morbidity and mortality of postoperative pancreatitis. The importance of this is emphasized in a recent report by Ranson, who points out that postoperative pancreatitis is more severe than other forms, and notes in addition the highest incidence of associated peripancreatic sepsis and abscess, 38.9%.[1] *Asymptomatic* postoperative hyperamylasemia has been documented to occur following 10-16% of surgical procedures both near to and remote from the pancreas,[2-3] and its benign nature noted. Although it might be assumed that postoperative diet progression occurred in standard fashion regardless of this asymptomatic hyperamylasemia, actual documentation has not been published.

The differential diagnosis of hyperamylasemia is extensive,[5] and many explanations for postoperative hyperamylasemia have been proposed. Postoperative elevations in amylase-to-creatinine clearance ratios have been found to be of little clinical value.[6,7,8] A variety of extrapancreatic tissues produce isoamylases, most notably the salivary glands, fallopian tubes, and liver.[5] A macroamylase enzyme has also been noted to increase the measured serum amylase level.[9] However, the routine fractionation of isoenzymes is not practical in routine laboratory determinations. Absorption of intraluminal amylase via mucosal defects has been advanced as an explanation for elevated amylase levels.[10] Various medications, notably narcotics and pharmacologic doses of steroids, have been associated with the development of pancreatitis.[11,12] Of interest is the finding that patients who experience perioperative hypothermia, for example, postcardiopulmonary bypass, may be at risk, for there is clear-cut evidence that shows varying degrees of pancreatic inflammation at autopsy in 50% of patients dying of hypothermia.[13]

Direct injury to the gland from either operative or nonoperative trauma is a frequent source of hyperamylasemia, but this leaves a large number of cases for which no explanation is known. Despite this lack of a known cause, and given a probable multifactorial etiology, it was our clinical impression that the asymptomatic amylase elevation could essentially be ignored as long as the patient was asymptomatic. Therefore, a prospective evaluation of our hypothesis was undertaken.

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Methods

Over a one-year period of time from June 1983 to June 1984, 19 postoperative patients were found to have asymptomatic hyperamylasemia. Blood samples for amylase determination were collected with routine morning blood drawing. Amylase levels were determined by conventional methods in our laboratory, normal values being less than 13 units. Patients having surgery on the pancreas itself were excluded, as were patients with blunt pancreatic trauma. Surgery in the region of the pancreas was not considered a reason for exclusion.

Each patient was carefully evaluated daily by the same investigator, (JTC), as well as the surgical attending and team residents, for the presence of pain (beyond what would be considered incisional), nausea, vomiting, prolonged ileus, or other signs or symptoms consistent with clinical pancreatitis. Records were inspected daily for type and amount of narcotic medication given. Daily amylase levels were followed until the value returned to normal or the patient was discharged. In each instance, diet was advanced in standard fashion regardless of the elevated serum amylase.

Patient histories were examined for previous ethanol ingestion, biliary tract disease, and pancreatitis. Preoperative and postoperative medication usage was recorded, as well as preoperative creatinine levels. Results of ultrasound and computed tomographic examinations were recorded in five patients.

A minimum two-year period of follow-up was achieved in all patients to allow time for any signs of clinical pancreatitis to develop postdischarge.

Results

Nineteen consecutive patients noted to have elevated postoperative amylase levels were examined. The average age was 61.4 years (range 15-91). There were seven males and 12 females.

There were no preoperative factors identifiable to

Table 1

Operation	*First Postoperative Day Amylase Elevated*	*Maximum Amylase Level*	*Postoperative Day Maximum Amylase*	*Days NPO/NG Suction*	*Days Amylase Elevated*	*Days to Normal Amylase or Discharge (DC) Amylase*
1 Coronary Artery Bypass	10	35	12	16	9	9
2 Ileocecectomy	6	29	7	5	7	DC-20
3 Right Colectomy	5	23	8	4	6	6
4 Right Colectomy	5	38	7	5	6	DC-34
5 Superior Mesentric Artery Embolectomy	5	23	9	6	5	5
6 Superior Mesenteric Artery Embolectomy	4	36	10	5	8	DC-30
7 Gastroplasty	4	20	4	4	2	2
8 Sigmoid Colectomy	4	25	5	4	4	4
9 Sigmoid Colectomy	3	26	4	4	4	4
10 Sigmoid Colectomy	3	25	12	6	13	DC-20
11 Transverse Colostomy	2	27	5	4	9	DC-25
12 Cholecystectomy - Common Duct Exploration	2	20	2	2	3	3
13 Cholecystectomy - Common Duct Exploration	1	70	1	1	1	1
14 Cholecystectomy - Common Duct Exploration	1	120	6	5	17	DC-38
15 Cholecystectomy	1	23	1	1	1	1
16 Cholecystectomy	1	180	2	1	3	3
17 Staging Laparotomy	1	47	1	7	12	DC-24
18 Perforated Duodenal Ulcer	0*	30	6	9	15	DC-29
19 Hemigastrectomy	0*	70	15	25	33	DC-28
Mean	3	45	6	6	8	4 if normal @ DC 27 if elevated @ DC

* Hyperamylasemia first noted in the recovery room

predispose these patients to hyperamylasemia. Alcohol consumption was low: four had moderate intake (at social events or weekends), 15 had rare to none. There were no previous episodes of pancreatitis. Two patients had undergone cholecystectomy prior to the current admission. One presented with acute cholecystitis, and one presented with obstructive jaundice; however, both had normal amylase levels preoperatively. Nine patients were hypertensive, and one diabetic. Seven patients took beta-blocking medicine, five thiazides, two methylprednisolone, one conjugated estrogens, one birth-control pills. The highest creatinine level was 2.8 mg/dl in two patients, the rest were normal. Hyperamylasemia has been noted in association with acidemia; however, none of the three patients with emergent operations had documented acidosis.[14]

The types of operations and the resultant amylase levels can be found in Table 1. One can see two patterns of amylase elevation: early—before or on the second postoperative day, and late—more than two days postoperatively. Of the eight gastroduodenal surgeries, seven were noted to be in the early group. The staging laparotomy and transverse colostomy also had early rises in amylase. With the exception of the vertical banded gastroplasty, the ten operations with late rises in amylase were those other than biliary or gastroduodenal. In addition, peak amylase level in the latter group tended to occur at the time of ileus resolution and resumption of diet in eight of these ten patients.

The mean maximal amylase level was 45 units, more than a three-fold elevation above our upper limit of normal, 13 units. Nine patients were discharged with elevated amylases. Of the ten patients reaching normal amylase levels before discharge, a mean of four days was required for this to occur. None of these 19 patients returned with clinical pancreatitis during the minimal follow-up period of two years. There was no pattern of pre- or postoperative medication and hyperamylasemia development. There was no suggestion of inordinately high narcotic administration in this subset of patients (Table 2).

Five of 19 patients had CT or ultrasound evaluation of their pancreases. All were unequivocally normal.

Even in patients who experienced further elevation of amylase with feeding, in no instance did a patient experience worsening of his clinical course or flare-up of pancreatitis. There was no increased morbidity or mortality associated with the resumption of diet advancement in the face of asymptomatic amylase elevation.

Discussion

Postoperative pancreatitis can be a devastating complication and is associated with a mortality of up to 50%.[15] Standard therapy includes gastrointestinal tract rest with intensive nutritional and medical support, while waiting for the amylase level to decline.

Various explanations for elevated postoperative amylase levels have been advanced, as enumerated earlier, although determination of the contributions of each of these to hyperamylasemia is difficult in clinical practice. It was our clinical impression that the postoperative course of the patient with an asymptomatic elevation of serum amylase would not be changed whether kept NPO or treated with usual diet advancement, regardless of etiology.

Table 2

Patient #	*Preoperative Medications*	*Postoperative Analgesia x Number of Days*
1	Propanolol, Nitroglycerin, Nifedipine	Morphine x 3, Meperidine x 2
2	None	Morphine x 4, Meperidine x 2
3	Digoxin, Spironolactone, Furosemide, Phenytoin	Morphine x 5
4	Metoprolol	Morphine x 4, Meperidine x 3
5	Digoxin, Theophylline	Morphine x 6
6	None	Meperidine x 3
7	Cimetidine	Meperidine x 2, Morphine x 4
8	Aspirin, Atenolol	Morphine x 2, Meperidine x 4
9	Methyldopa - Hydrochlorothiazide	Morphine x 2, Meperidine x 3
10	Thyroid	Morphine x 2, Meperidine x 5, Oxycodone x 3
11	Propanolol Hydrochlorothiazide, Methylpredisolone, Premarin	Morphine x 4, Oxycodone x 4
12	Metoprolol	Meperidine x 4, Oxycodone x 6
13	Birth Control Pills	Meperidine x 6, Oxycodone x 2
14	Atenolol	Meperidine x 7, Oxycodone x 4
15	Hydrochlorthiazide	Meperidine x 2, Oxycodone
16	None	Meperidine x 4
17	None	Meperidine x 2
18	Methylprednisolone, Theophylline, Ibuprofen, Diflunisal	Meperidine x 9, Oxycodone x 5
19	Metoprolol, Cimetidine, Conjugated-Estrogens	Morphine x 4, Meperidine x 21, Oxycodone x 5

This is especially important with today's fixed-dollar allowances for medical services, as unnecessarily prolonging postoperative hospital stay can substantially increase expenses. In this study, a mean of four days was needed for hyperamylasemia to resolve, which would mean a substantial increase in cost had oral alimentation been withheld pending its resolution. Conversely, premature initiation of oral alimentation which might incite clinical pancreatitis postoperatively would be undesirable for the patient.

There were no preoperative factors identifiable by history to predispose these patients to hyperamylasemia, such as excessive alcohol consumption, medication usage, or prior history of pancreatitis.

None of these patients had postdischarge clinical pancreatitis or long-term complications reported by their surgeons. In particular, the nine patients discharged with persistent hyperamylasemia remained symptom-free. We feel, therefore, that the postoperative patient with an asymptomatic amylase elevation can be safely treated the same as any other postoperative patient as long as he remains symptom-free; we thereby avoid an unnecessary prolongation of the postoperative course.

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An Unusual Case of Disseminated Histoplasmosis

MAUREEN ZAKOWSKI, M.D. AND SOLON COLE, M.D.

ABSTRACT–The clinical and pathologic findings in a case of disseminated histoplasmosis in a patient with HIV positivity are presented. The incidence of histoplasmosis in Connecticut is low and this diagnosis was not initially considered. Particular attention should be paid to unusual infections in immunosuppressed patients, even when the infections occur outside the endemic area.

Introduction

Histoplasmosis is a mycotic disease first described by Samuel Darling in 1905. Darling, who had been looking for leishmaniasis (kala azar) in the Panama Canal Zone, began investigating patients dying of an unexplained febrile illness. He termed the causative organism which he found within the histiocytes of the reticuloendothelial system, *Histoplasma capsulatum,* and considered it an encapsulated protozoan. Darling described three fatal cases of this disease in Panama and a fourth was identified at autopsy in Minnesota in 1926. It was not until 1934 that this diagnosis was made ante-mortem and not until 1949 was the organism isolated from the soil, its natural reservoir.

The causative agent of histoplasmosis is a dimorphic fungus which exists as a yeast at mammalian body temperature and in mycelial form at room temperature in culture. It is found in the soil, particularly where enriched by bird or bat droppings. In fact, it is most often found near chicken coops. Inhalation of spores is the primary means of infection and reinfection in this illness. The disease is usually localized and respiratory in nature. Three clinical patterns of disease are commonly encountered: (1) **Primary acute form.** The most common primary site of infection in man is the respiratory system where the disease is usually mild or even asymptomatic. Here the disease most resembles tuberculosis, for which it is often mistaken. The pulmonary lesions may resolve entirely, or evidence of infection may persist as calcifications on roentgenograph in a "buckshot" pattern. Mediastinal lymph node calcifications may also be present. Pulmonary histoplasmosis can progress to a more severe disseminated disease. (2) **Severe disseminated form.** This is the form of disease that was originally described by Darling and exists in a small percentage of infected patients. Usually associated with severe or repeated exposure, pulmonary manifestations as well as hepatosplenomegaly, fever, anemia, leukopenia, weight loss, and generalized lymphadenopathy are seen. It is the protean presentation of histoplasmosis that can obscure diagnosis and delay proper treatment. It is thought the infection may follow ingestion of spores as well as inhalation because intestinal lesions can predominate in the disseminated form with mucosal ulcerations present throughout the gastrointestinal tract. (3) **Chronic cavitary form.** This form occurs most often in adults and pulmonary cavitary lesions are found resembling those of tuberculosis. These lesions may represent reactivation of a primary lesion or progression of a pulmonary lesion.[1] Chronic cavitary infection can result in sclerosing mediastinitis.

In the United States *Histoplasma* and the disease histoplasmosis is encountered most frequently and is endemic in the Central States along the Mississippi River Valley area. It is, however, encountered throughout the entire country and has been reported from temperate zones world wide. The geographic distribution of the fungus has been defined by histoplasmin skin reactivity determinations in human beings and animals. For example, in parts of middle Tennessee and Kentucky, the percentage of positive reactors is as high as 95, while in the New England States it is as low as 5%.[2] In Hartford Hospital as many as three cases per year are seen, usually with pulmonary manifestations.[3] Although the acute pulmonary form of histoplasmosis is a common illness, affecting as many as 500,000 people annually in the United States, the disseminated form of the disease is rare.[4] The risk of developing disseminated disease is increased with frequency of severe exposure, extremes of age, Caucasian race, male gender, diabetes mellitus, impaired cell mediated immunity, and immunosuppression. This last is the strongest factor noted and is associated with overwhelming disseminated infection. Disseminated histoplasmosis has been described by many authors secondary to steroid induced immunosuppression, and systemic disease has been reported in association with Hodgkin's disease, leukemia, lymphoma, and cancer chemotherapy. Histoplasmosis is

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also reported in patients with the acquired immune deficiency syndrome[5,6,7] and has recently been described as the initial manifestation of AIDS in a previously healthy male patient.[8]

Case Report

We document an unusual case of fatal disseminated histoplasmosis in a middle-aged Puerto Rican woman residing in Connecticut. Although she had no known risk factors for AIDS, she was found to be HIV antibody positive. The patient was admitted to Hartford Hospital with complaints of diarrhea and a 25 pound weight loss. A mild infection with *Schistosoma mansoni* was diagnosed and treated with praziquantel. Despite brief abatement of symptoms she was shortly readmitted with further weight loss and diarrhea, abdominal pain, anemia (hematocrit 30%), low grade fever, and sweating episodes. She had no cough, chest pain, vomiting, rash or jaundice and her past medical history was negative for tuberculosis, diabetes mellitus, hepatitis, and alcohol abuse. She had suffered a subdural hematoma in 1972 and was medicated with phenytoin (Dilantin) as prophylaxis against seizure activity. Work up included liver and small bowel biopsies which were negative for significant findings; her chest X-ray was read as showing bilateral diffuse confluent infiltrates. She was found to have an elevated erythrocyte sedimentation rate (110) and elevated polyclonal serum IgG with Raji cell assay evidence of immune complex formation. She began spiking fevers to 103 F. Repeated cultures of bone marrow, blood, sputum, and urine for bacterial and fungal organisms including acid-fast bacilli were negative. Her phenytoin was withheld to rule out drug fever and she experienced a seizure. She became weak, confused and hypotensive; methylprednisolone sodium succinate was given to maintain blood pressure. She was also empirically treated with isoniazid for disseminated tuberculosis. Soon after initiation of steroid therapy, multiple intracellular organisms identified as *Histoplasma capsulatum* were seen on routine peripheral blood smear; they were located within leukocytes and monocytes (Figure 1). Despite prompt treatment with amphotericin B, she suffered a stroke and died with disseminated histoplasmosis.

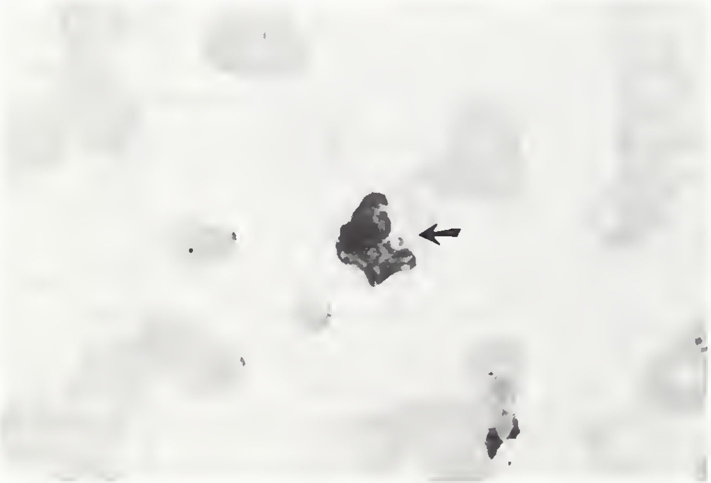

Figure 1

Intracellular Histoplasma capsulatum seen on peripheral blood smear (X 6875).

Pathology Findings

Postmortem examination revealed a markedly cachectic middle-aged woman with no peripheral lymphadenopathy. Ulcerated oral mucosal lesions were found. Both lungs were diffusely congested and consolidated but no recent or remote evidence of granulomatous fungal disease could be seen grossly. The hilar and mediastinal as well as mesenteric lymph nodes were enlarged with caseous necrosis and measured up to 4 cm in size. The massively enlarged liver weighed 2,860 g and was severely necrotic. The spleen, also enlarged at 300 g, showed a prominent nodularity. Microscopic sections of these organs demonstrated necrotizing granulomata with numerous tiny organisms. Special histologic staining techniques using Gomori methanimine silver (GMS) and Periodic Acid Schiff (PAS) reagent demonstrated enormous numbers of intracellular organisms morphologically consistent with *Histoplasma capsulatum* (Figure 2). Direct immunofluorescent antibody staining (performed by the Center for Disease Control in Atlanta) on lymph nodes removed at autopsy confirmed the presence of the organism. Postmortem cultures of blood, liver, lung, spleen, and lymph nodes grew *H. capsulatum* in the yeast form which was later successfully converted to the mycelial phase characterized by macroconidia (Figure 3). Serum drawn prior to death was found to be HIV-antibody positive by the Center for Disease Control in Atlanta. Electron microscopy of lymph node tissue taken at autopsy revealed particles consistent with those of the human immunodeficiency virus (Figure 4).

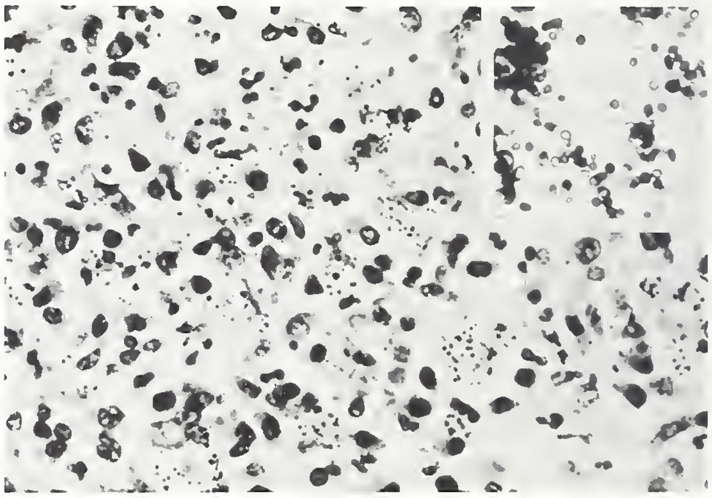

Figure 2

H+E stain of spleen with multiple organisms seen (X687.5); insert: GMS stain of spleen showing organisms in budding yeast form (X2750).

Discussion

This patient is interesting for several reasons. Histoplasmosis is an uncommon illness in the Connecticut River Valley, and when present is most often confined to the respiratory system. Our case represents an infection that was acquired outside of the usual endemic area. Although this patient may have become infected in Puerto Rico and carried the disease with her to Hartford, the incidence of histoplasmosis in Puerto Rico approximates that in Florida where the percentage of positive skin reactors

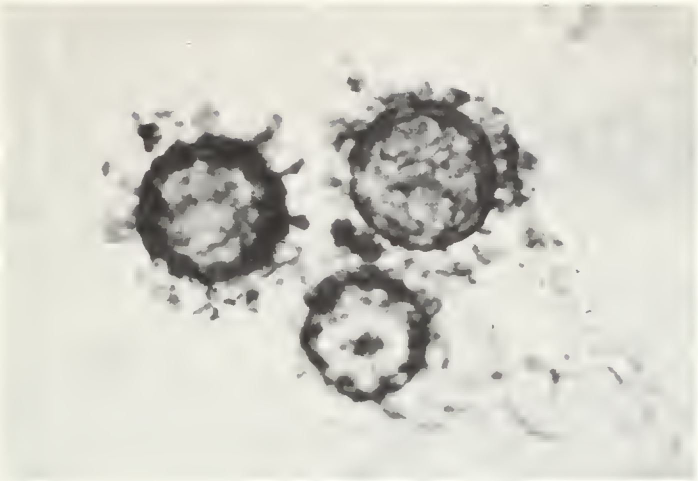

Figure 3

Macroconidia of Histoplasma capsulatum grown in laboratory (X6875).

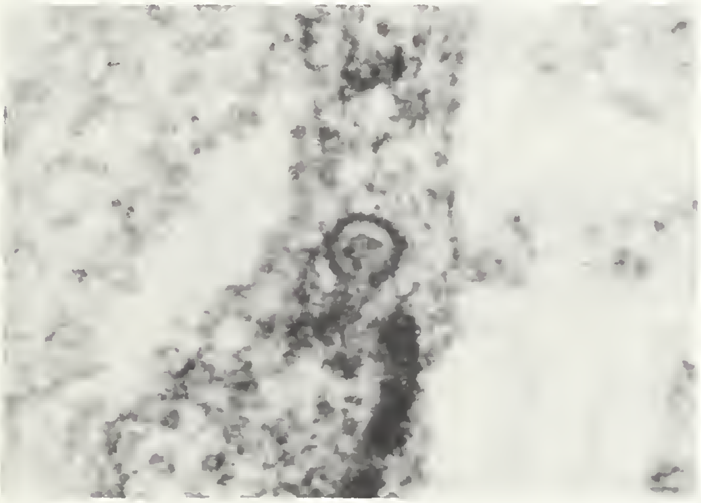

Figure 4

Electron micrograph of lymph node showing particle of HIV (X169,000).

is as low as ten.[9] The patient was not elderly, diabetic, or known to be immunocompromised at the time of presentation. Although histoplasmosis was not considered in the differential diagnosis in this case, the laboratory investigations done were adequate to identify the infecting organism. Liver and bowel biopsies failed to demonstrate the fungus and repeated cultures of blood, bone marrow, urine, and sputum were mysteriously negative. Not until steroids were administered did the disseminated disease become apparent.

Histoplasmosis as well as other, better known, opportunistic infections are recognized in patients with AIDS. Abnormalities in T-cell mediated (cellular) immunity make AIDS patients highly susceptible to various bacterial, viral, and fungal infections and greatly impair their ability to survive such infections. No OKT4 or OKT8 lymphocyte studies were done on this patient but HIV antibody was identified in her blood. This suggests that the disseminated histoplasmosis resulted from low grade exposure in a patient immunocompromised by AIDS. The origin of AIDS in this case is unknown and seemingly unrelated to sexual contact, intravenous drug abuse, or transfusion therapy.

Physicians practicing in the Hartford area should include histoplasmosis in the differential diagnosis of patients presenting with febrile wasting illnesses, particularly when tuberculosis is considered. The identification of unusual infections such as disseminated histoplasmosis should, of course, alert the clinician to the possibility of AIDS.

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Abstracts by Residents and Fellows

AMERICAN COLLEGE OF PHYSICIANS, CONNECTICUT CHAPTER

FOREWARD: The American College of Physicians, Connecticut Chapter, held its annual meeting on 16 October 1987 at Hartford Hospital. As part of this program, six prize winning papers by Associates of the College were selected for presentation. The abstracts, whose first authors are medical residents and fellows, are printed below. We applaud the support given to the authors by members of their teaching faculties. It is our hope that this collection of papers by Associates of the College of Physicians will stimulate an annual tradition of similar efforts in all our teaching hospitals. The prize-winning papers are represented by the first six abstracts.

Joseph L. Belsky, M.D., FACP, ACP Governor for Connecticut, Department of Medicine, Danbury Hospital.

Long-Term Survival in the Wiskott-Aldrich Syndrome: Case Study of Three Siblings and Possible Factors Accounting for Long Term Survival

ALEXANDER J. ALVAREZ, M.D., St. Mary's Hospital, Waterbury

The Wiskott-Aldrich syndrome is an X-linked genetic disease characterized by; eczema, thrombocytopenia, and repeated infections. Affected males usually present with bleeding in infancy. Most do not survive childhood, dying of bleeding, infection, or lymphoreticular malignancy.

We have had the opportunity to follow the clinical course of three males within the same family from birth, and have documented a wide spectrum of manifestations seen in patients afflicted with the Wiskott-Aldrich Syndrome.

Of the four boys in this family, three (Larry, Joseph, and John) are affected with WAS, the oldest of the four brothers is apparently normal. All of the three boys affected have shown recurrent purulent otitis media within the first few years of their lives. All three also exhibited low isoagglutinin titers to polysaccharide antigens. Two of them have decreased IgM as well. Delayed hypersensitivity (assayed by skin tests) was not impaired as of 1970. The same two boys with decreased IgM also have an increase in their marrow aspirates of megakaryocytes.

Morphological, functional, and kenetic studies of lymphocytes, granulocytes and platelets were carried out including long term follow up of "transfer factor" which all three boys received. Similar measurements from their mother were also logged.

In vitro lymphocyte culture responses, bone marrow stain for lysosomes, phagocytic function, and repeated routine immunologic studies have been performed in all three boys since birth and are still actively continued.

Possible factors for their long term survival are discussed.

Recurrent Hyperinsulinemic Hypoglycemia, Psychosis and Flushing in a 75-Year-Old Man

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A 75-year-old man developed episodic disorientation, visual hallucination, and facial flushing associated with documented hyperinsulinemic hypoglycemia. Urine toxicology was negative. C-peptide levels did not fall during an insulin suppression test. Abdominal computed tomographic (CT) scan and arteriography failed to demonstrate an insulinoma. The patient transiently improved with dietary modification. Over the following 16 months, he experienced several episodes of flushing and diaphoresis. He was hospitalized following a three hour episode of visual hallucinations and facial flushing with hyperinsulinemic hypoglycemia. Urinary 5-HIAA was slightly elevated. Abdominal and chest CT, abdominal ultrasonography, upper gastro-intestinal x-ray series and flexible sigmoidoscopy failed to reveal a carcinoid tumor or insulinoma. He became normoglycemic for one month on phenytoin therapy. Over the subsequent two months, episodes of flushing and disorientation became more frequent. Exploratory laparotomy with intraoperative pancreatic ultrasonography was performed. The pancreas was diffusely enlarged with an orange-yellow discoloration and a questionable mass in its midportion. Following an 80% distal pancreatectomy, histologic examination disclosed islet cell hyperplasia with islet cell clusters arising from pancreatic ductal epithelium, the hallmark feature in nesidioblastosis. Two months postoperatively, the patient remains asymptomatic with normal glucose and insulin levels. Urinary 5-HIAA levels remain normal.

Nesidioblastosis is the most common cause for hyperinsulinemic hypoglycemia in neonates and infants. It may be an underdiagnosed entity in adults presenting with hypoglycemia in whom no insulinoma is found; awareness of this disorder may reveal many other cases in the population.

American Burkitt's Lymphoma in a Male Homosexual Presenting as Pericardial Tumor with Cardiac Tamponade

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A 35-year-old homosexual male was admitted for progressive shortness of breath and dyspnea on exertion associated with vague abdominal complaints and a 10-12 pound weight gain without fever, chills, or night sweats. His course was complicated by rapid deterioration characterized by severe hypotension, tachypnea, tachycardia, and elevated pulsus paradoxus. Chest computed tomography revealed bilateral pleural effusions and pericardial effusion. A 2D and M-mode echocardiogram also revealed the presence of a large mass in the free wall of the right ventricle. An open pericardial drainage procedure was performed. Pericardial biopsy revealed the presence of a B-cell lymphoma (BCL) consistent with American Burkitt's lymphoma (ABL) within the pericardial fat and in pericardial fluid cell block.

Immunosuppressed patients, especially those with renal, cardiac, and bone marrow transplants, are at increased risk of developing malignant lymphomas (ML), especially of BCL. More recently, there have been an increasing number of ML occurring in patients with AIDS and in homosexual males. There are almost 200 cases of BCL documented in this patient population. ML make up about 9% of metastases to the heart, and about 20% of patients dying of ML have cardiac involvement. There are fewer than 50 reported cases of ML with cardiac involvement at initial diagnosis. This may be the first reported case of ABL presenting with cardiac involvement and cardiac tamponade at diagnosis.

Legionella Infection in AIDS

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Patients with defects in cell-mediated immunity are at high risk for infection with *Legionella pneumophila,* although such infections have been rarely reported in patients with the acquired immune deficiency syndrome (AIDS). We report a case of *L. pneumophila* pneumonia in a patient with AIDS presenting as bilateral nodular infiltrates.

The patient was a 29-year-old homosexual male with an 18 month history of Kaposi's sarcoma (HIV Ab+), who presented with acute onset of fever, dyspnea, mental confusion, and bilateral nodular infiltrates. Expectorated sputum culture was positive for *Klebsiella oxytoca* and Candida species. He had been hospitalized two weeks previously for work-up of a pleural effusion and pulmonary infiltrate. Pleural biopsy, bronchoal veolar lavage, multiple cultures, stains, and gallium scan were all negative at that time.

With the radiographic presentation of nodular infiltrates, a fungal etiology was suspected. Treatment with amphotericin B was begun, but the patient failed to respond and expired on the third hospital day. At autopsy, *L. pneumophila,* serogroup 3, was demonstrated by culture, DFA, and Dieterle stain in lungs and pericardium.

L. pneumophila is a rare opportunistic pathogen in AIDS patients and is uncommonly reported as a cause of nodular infiltrates. We suggest that it be considered more frequently in the immunosuppressed AIDS population.

Erysipelothrix rhusiopathiae Endocarditis

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A 43-year-old white male with a past medical history of alcoholism and steroid dependent asthma had been taking doses of prednisone of up to 80 mg per day for the past several years. He had long been employed as a meat handler. He presented with one month of lethargy, a 20-pound weight loss, and anorexia and a two day history of fever, abdominal pain, and diarrhea. He was treated with broad spectrum antibiotics. On the second day of his hospitalization, he developed a new murmur and cardiac echocardiogram showed a vegetation on the aortic valve. Blood cultures grew *Erysipelothrix rhusiopathiae* in three out of three cultures. He was given appropriate antibiotics considering his allergy to the penicillins. However, over the next two days his course was complicated by congestive heart failure and renal insufficiency. He expired on the seventh day of hospitalization.

Autopsy showed a nearly totally destroyed aortic valve without evidence of prior rheumatic disease. Gram-positive rods were clearly seen in the vegetation. There was no evidence of septic embolization.

Migration of a Kimray-Greenfield Vena Caval Filter to the Right Atrium Causing Right Heart Failure, Dysphagia, and Weight Loss

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The Kimray-Greenfield vena caval filter (KGVCF) can prevent pulmonary embolus when systemic anticoagulation is contraindicated. We present a case of KGVCF migration to the right atrium (RA) two years post-insertion, which has only been reported once previously.

Patient is a 73-year-old male with KGVCF placement two years earlier for recurrent deep venous thromboses and rectal bleeding on Warfarin. He presented to Danbury Hospital with a three month history of dysphagia for solids, progressive leg edema and ten pound weight loss. Physical exam revealed positive hepato-jugular reflux, hepatomegaly, and 4+ pitting edema to the knees. Chest radiograph showed the KGVCF in the RA, verified with chest computed tomography scan and echocardiogram. The KGVCF was removed surgically with subsequent resolution of the edema and dysphagia.

The KGVCF can be life-saving and is associated with relatively few complications. This case illustrates right heart failure and dysphagia from a migrating KGVCF. Misplacement of the KGVCF is known to occur during insertion; post-insertion migration to the heart has been reported only once previously.

Gastrointestinal Source of Lower Extremity Subcutaneous Emphysema

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Recurrent necrotizing colonic malignancy presenting as retropneumoperitoneum and *Clostridium septicum* myonecrosis with subcutaneous emphysema of the thigh is a rare and rapidly fatal disease even when recognized early and treated aggressively. This condition has previously been described in patients with debilitating illnesses and neoplastic diseases. Although it is debated whether *Clostridium septicum* is a normal inhabitant of the gastrointestinal tract, ischemia of the intestinal mucosa associated with radiation therapy, chemotherapy, or infiltrative cancer is the presumed portal of entry for this organism. Our non-diabetic patient with known advanced adenocarcinoma of the colon, treated in the past with chemotherapy and radiotherapy, presented with vague lower back pain and subcutaneous emphysema of the thigh. Despite vigorous antimicrobial therapy and surgical intervention, the patient died within twelve hours of her admission. A review of this rapidly progressive entity, associated clinical features, and therapeutic strategies associated with clinical remission will be presented and discussed.

Improving Outcome of Subarachnoid Hemorrhage Using Morphine and Phenobarbital Therapy

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A healthy 38-year-old woman developed a severe generalized headache during sexual intercourse. One hour after onset, she presented with nausea, vomiting, meningismus, photophobia, confusion, disorientation, bradycardia, and right-sided weakness. A head computed tomographic scan was suggestive of subarachnoid hemorrhage (SAH) which was confirmed by lumbar puncture. Strict bedrest in a quiet, darkened room was arranged. Morphine sulfate was administered intravenously to maintain a pain-free and drowsy, but arouseable, state. Phenobarbital was administered intravenously for its sedative and anticonvulsant effects. Cerebral angiography on the third day failed to reveal any pathology. A second arteriogram obtained on the 21st day revealed a 5mm left middle cerebral artery saccular aneurysm without evidence of vasospasm. Following resolution of a 14-day fever of unexplained etiology and two episodes of the syndrome of inappropriate ADH, the aneurysm was resected without complication. The phenobarbital was discontinued and morphine was tapered 24 hours preoperatively. Nine days postoperatively, she was discharged with mild right arm weakness and right leg spasticity. These findings resolved completely within nine months. Twenty months following the SAH, she resumed her original occupation without any residual physical or emotional deficits.

To date, there is no consensus on which medical or surgical therapy minimizes complications associated with SAH, specifically cerebral arterial vasospasm and recurrent hemorrhage. This account is of one patient in our series of 31 cases of SAH treated preoperatively with morphine and phenobarbital. Experiences with the continuous administration of morphine and phenobarbital in the acute stages of SAH suggest significant reduction in the usually devastating preoperative complications seen with this illness and an outcome significantly better than has been previously reported.

Fasting Hypoglycemia and the Diagnosis of Insulinoma

ARCANGELO DISTEFANO, M.D. and JOHN MORELLI, M.D., Bridgeport

Fasting hypoglycemia is a clinical syndrome presenting mainly with neurological alterations (headaches, blurred vision, incoherence, aphasia, hemiplegia, hallucinations, coma) and to a lesser degree with adrenergic changes (diaphoresis, weakness, hunger, palpitations, tremulousness) occurring at least six hours post-prandially as a result of a low level of blood glucose. One of the rare causes of fasting hypoglycemia is an insulin-producing islet-cell tumor. In the case of an Insulinoma, symptoms may be intermittent, occur at irregular intervals, and have varying degrees of neuroglycopenia. The diagnosis of an insulin-producing islet-cell tumor is made by documenting inappropriately elevated insulin levels in association with symptomatic hypoglycemia. However, one must exclude states of factitious hypoglycemia (exogenous insulin, use of oral hypoglycemic agents, congenital, and autoimmune conditions).

Our report is of a 28-year-old white female with a one year history of symptomatic hypoglycemia who presented two months post-partum with new onset of atrial fibrillation, seizures, and hypoglycemia.

Fatal Calcific Heart Disease in Acute Primary Hyperparathyroidism

JEFFREY KATZ, M.D. and ROBERT P. FERGUSON, M.D., Mount Sinai Hospital, Hartford

A 62-year-old black male presented with severe hypercalcemia secondary to acute primary hyperparathyroidism. The patient died one month later from well documented progressive cardiac disease including a pre-terminal acute myocardial infarction. Autopsy revealed multi-organ metastatic calcifications including extensive calcifications in the small vessels of the heart with diffuse patchy necrosis of the myocardium. In the absence of significant atherosclerosis, we feel that metastatic cardiac calcification caused his death. Although cardiac calcifications have been reported with primary hyperparathyroidism, clinical correlations have been rarely described. Our patient demonstrates that extensive metastatic calcifications in certain settings may result in a fatal outcome.

Clostridium perfringens Septicemia with the Organisms Seen on Bone Marrow Aspiration

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Clostridium perfringens septicemia (CPS) with intravascular hemolysis has a high mortality. We present a case of CPS where the organisms were seen on Gram stain of a bone marrow aspiration (BMA), a finding not previously reported.

The patient was an 83-year-old female who had a hemoglobin of 6.7 gm three weeks prior to admission and refused further evaluation. On the day of admission she presented to Danbury Hospital with a fever of 40.5°C, lethargy, disorientation, and back pain of several hours duration. Upon phlebotomy the patient's blood rapidly hemolyzed in the collecting tubes. Laboratory: hemoglobin, 3 gm; hematocrit, 5%; and platelet count, 34,000. A bone marrow aspiration was performed and Gram stain of the aspirate revealed many large, sporulated gram-positive rods. She expired several hours later from shock. Blood cultures subsequently grew *Clostridia perfringens.*

CPS can cause massive intravascular hemolysis by lecithinase and alpha-toxin production, particularly in patients with malignancy or neutropenia. Demonstration of the organisms in bone marrow aspiration has not been previously described and illustrates the extensive hematologic involvement in CPS.

Streptococcemic Scarlet Fever

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Streptococcemia is a rare complication of Group A streptococcal (A-strep) infection. This case report illustrates a clinical syndrome of Group A streptococcemia manifested by fever, scarlatiniform rash, and pharyngitis associated with a skin abscess.

A 59-year-old woman presented with a symptom complex of sore throat, sore red eyes, a painful swollen right heel, and a generalized rash. Physical examination revealed fever, 34.2°C, bilateral conjunctivitis, strawberry tongue, pharyngitis, and a generalized scalatiniform rash. She had a swollen, red, tender right heel as well as cellulitis of the right thigh. Laboratory data revealed a normal total white blood cell count with a marked left shift, mild azotemia, pyuria, and hematuria and a positive streptozyme test. The patient was admitted to the intensive care unit and treated with oxacillin and gentamicin. The patient's course was complicated by hypotension which responded to intravenous saline and vasopressors. Blood and heel (abscess) cultures were positive for Group A streptococcus and the patient's antibiotics were changed to penicillin. The patient's rash evolved into generalized bullous followed by desquamating lesions which were consistent with a staphylococcal scalded skin syndrome (SSSS) requiring the reinstitution of oxacillin. Subsequently the patient developed respiratory failure associated with heart failure and required intubation and assisted ventilation. Over the following two weeks fever and skin lesions resolved. The patient was successfully weaned off the ventilator and transferred out of the intensive care unit in markedly improved condition.

Streptococcemia is a devastating illness with mortality exceeding 20% in patients treated with antibiotics. This case illustrates a unique presentation for Group A streptococcemia; in one series, scarlet fever was present in only about 5% of patients. Although a wound or skin site is typically present as the source of infection in about 50% of unselected patients with streptococcemia, 74% of these patients have underlying predisposing conditions (ie, malignancy, IV drug abuse, or immunosuppressive therapy). This case is very unusual in that the patient had none of these conditions. In rare cases, *Staphylococcus aureus* has been cultured from skin sites in patients with scarlet fever. Although *S. aureus* was not cultured in this patient, the development of a desquamating rash consistent with SSSS and responsive to oxacillin raises the possibility that *S. aureus* was also implicated.

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Important Advances in Clinical Medicine

Dermatology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in dermatology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in dermatology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Dermatology of the California Medical Association and the summaries were prepared under its direction.

Removing Tattoos

Tattoos are accidental or intentional injections of pigment into the skin. This pigment is long-lasting and, when removal is required, physicians must choose among a variety of methods, none of which will restore the skin to its pretattoo appearance.

Methods of tattoo removal include excision with primary closure or skin grafting, serial excision, tissue expansion and excision, liquid nitrogen cryotherapy, laser vaporization, dermabrasion or salabrasion, caustics, infrared coagulator and serial tangential excision. An excellent summary of tattooing and the older methods of tattoo removal appeared in a special issue on tattoos in *The Journal of Dermatologic Surgery and Oncology* in 1979.

Excision is clearly the best way to remove a tattoo that is small or configured favorably for simple primary closure. In such cases, 100% tattoo removal is assured. The procedure is simple and cost-effective and results in a predictable and usually cosmetically acceptable scar. Negative aspects of excision include a delayed widening of the scar line, hypertrophic or keloidal scarring and limited use of the affected body area until the wound gains sufficient tensile strength not to dehisce. Over joints or skin with limited suppleness, primary closure may not be possible.

When skin grafting, tissue expansion or serial excision is necessary, strong consideration should be given to alternative methods of removal. These techniques are very time-consuming and expensive, especially if time lost from work is considered. Donor scars from skin grafts add to the discomfort and cosmetic liability of the technique. Graft texture and color differences from surrounding skin may also be a problem.

Dermabrasion can be a valuable method of removing larger tattoos in areas such as the dorsal forearms where hypertrophic scars are less frequent. It is particularly helpful in removing pastel tattoos, but is poor at removing black ink tattoos. Hypertrophic scarring is a frequent complication of dermabrasion. Residual pigment shadowing frequency follows dermabrasion, and the technique does not permit total tattoo removal at the time of the surgical procedure; the surgeon does not know the result of the procedure until weeks to months postoperatively. A test area before treatment is recommended.

Laser removal of tattoos has recently gained in popularity. The versatile carbon dioxide laser is usually the laser of choice for removing tattoos. It is simple to use, compact, mobile and increasingly less expensive. The laser can generally be plugged into any office outlet. Clear glasses block the CO_2 laser light so there is excellent visualization of the operative site. With a continuous-mode operation, large tattoos can be removed quickly. The CO_2 laser is not color-specific. When correctly used there should be little thermal damage of adjacent tissues. A tattoo can be completely removed in one session, and there is no bleeding of the surgical site. Healing occurs by secondary intention, and the patient can return to work immediately after the operation. This alone makes laser surgery cost-effective. The laser treatment can be extended

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to adjacent areas to avoid a "negative image" scar. Postoperative care is simple and there is little or no postoperative pain. Areas previously thought difficult to treat such as the ankles and backs of the fingers may be treated with a CO_2 laser.

Test areas generally should be done before laser tattoo removal. Occasionally a "blush of dye" may remain at the operative site. Hypertrophic scars can occur, and thumb-web tattoos are especially prone to excessive scarring. Pastel colors are not as preferentially removed by laser as they are by dermabrasion. Old tattoos are difficult to remove and often leave a blush of pigment in the scar. There is a "cigarette paper" texture to the healed skin, and the skin remains susceptible to trauma for as long as a year after a laser procedure. Some deep tattoos cannot be removed by laser vaporization. Tattoo dots ("crazy dots") are not well removed by laser but are easily removed by punch excision. Skin color changes frequently occur after a laser operation, but these usually return to near normal within two years. Homemade tattoos are usually not more difficult to treat than professional tattoos.

No method can remove a tattoo without a scar, and patients must be aware of the complications of the tattoo removal method that is used.

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Lyme Disease

Lyme disease, which is caused by a tick bite, initially presents with erythema chronicum migrans, fever and arthralgias. The rash spreads out from the bite, forming a raised border as it clears in the middle. Neurologic signs may develop later that can mimic viral meningitis or Bell's palsy and cardiac problems including myocarditis. The disease was first described by Steer in Lyme, Connecticut. In the West, the deer tick *Ixodes pacificus* transmits the disease. A history of an outing to a wooded area is common. The causative organism disseminated by the tick is the spirochete *Borrelia burgdorferi*.

The diagnosis can be confirmed by identifying antibodies to the *Borrelia* organism with either an immunofluourescence test or an enzyme-linked immunosorbent assay (ELISA). The fluorescent treponemal antibody absorption test may be positive in these patients. False-positive results, particularly with immunofluorescent testing, may be caused by other *Borrelia* spirochete infections, syphilis or possibly connective tissue disease. Apparent differences reported between immunofluorescent and ELISA testing for the *Borrelia* antibody is a major problem impeding advances in this area.

Antibiotic treatment with tetracycline or penicillin is usually curative for diseases caused by *B burgdorferi*.

Acrodermatitis chronica atrophicans, a cutaneous disease with both sclerotic and atrophic features, is also caused by *B burgdorferi*.

Other dermatologic diseases in which *B burgdorferi* has been suggested as a cause include localized scleroderma, lichen sclerosus et atrophicus and lymphadenosis benigna cutis. Preliminary serologic studies and possible identification of the organisms in affected tissue have been reported in these conditions but need further clarification.

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Ketoconazole Use in Tinea Versicolor

In two studies involving 62 patients, the use of ketoconazole, 400 mg in a single dose, was effective in clearing tinea versicolor, both clinically and mycologically, in 60 of the patients treated. The drug should be taken with breakfast, preferably with fruit juice. Because ketoconazole is rapidly excreted in sweat, patients should not bathe for 12 hours after taking the drug. If a patient is also taking cimetidine or β-blocker drugs, these must be withheld until two hours after taking the ketoconazole. If a patient is achlorhydric, the drug can be taken with lemon juice or a pharmacist can mix the two tablets (equivalent to 400 mg of ketoconazole) with an 8-ml aqueous solution of 0.2N hydrochloric acid. Caution the patient to take the mixture through a straw and immediately drink water to prevent damage to the teeth. Liver function tests are not indicated as hepatotoxicity is rare (1/15,000) and has never been reported in short-term therapy. Patients treated with this regimen have not noted any side effects. Residual hypopigmentation from the fungus may persist, however, until the patient is exposed to ultraviolet light.

Ketoconazole may enhance the anticoagulant effect of coumarin-like drugs. The use of ketoconazole with rifampin, isoniazid, phenytoin and hypoglycemic agents is not recommended, nor should ketoconazole be given to pregnant or nursing women who have tinea versicolor.

Preliminary studies indicate that recurrences are less frequent than those following topical therapy. Patients prefer the ketoconazole regimen, if the disease recurs, rather than other forms of treatment.

In summary, a single 400-mg dose of ketoconazole will clear tinea versicolor, provided that the patient complies with the regimen.

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Recent Advances in Clinical Use of Retinoids

Vitamin A was first used about 40 years ago as therapy for various skin diseases and is a well-known regulator of epithelial growth and differentiation. Retinol taken in high oral dosages can cause significant toxicity problems, such as fatigue, headaches, cheilitis, anorexia, peeling of the skin, pseudotumor cerebri, papillary edema, hepatotoxicity, skeletal hyperostosis and lipid abnormalities. Because of this toxicity the use of vitamin A declined, but in the 1970s several vitamin A analogs were investigated as treatment of diseases such as acne, psoriasis, ichthyosis and other disorders of cornification. The beneficial effects of the use of 13-*cis*-retinoic acid for the treatment of lamellar ichthyosis were described in 1976 and shortly thereafter in patients suffering from severe nodular cystic acne. In subsequent studies, 13-*cis*-retinoic acid was found to be of value in generalized pustular psoriasis but was much less effective for other forms of psoriasis vulgaris. Etretinate was reported to have significant effects as therapy for severe forms of psoriasis vulgaris and was approved by the Food and Drug Administration in late 1986 as a treatment of severe recalcitrant psoriasis, exfoliative erythrodermic psoriasis and generalized pustular psoriasis. Its optimal use in severe plaque psoriasis is in combination with other forms of therapy, such as psoralen and high-intensity ultraviolet A phototherapy. Etretinate and 13-*cis*-retinoic acid have all the side effects listed above with retinol.

One additional problem of toxicity with etretinate is that it continues to be excreted for a long period after the drug therapy has been stopped. In women of child-bearing age, therefore, this drug should not be used, as the risks of teratogenicity may still be present for as long as two years or more after its use has been discontinued.

Clinical studies are currently being undertaken with the carboxylic acid derivative of etretinate, which will be known in the United States as acitretin. This drug has the efficacy and toxicity of etretinate but is much more rapidly excreted and therefore could be given to women of child-bearing age providing contraception is used during the drug therapy and for four weeks thereafter. The hope is that newer retinoids will be discovered that may have less toxicity but retain clinical efficacy. Systemic retinoids are valuable drugs that need to be used cautiously by dermatologists skilled in their use. They represent a major advance in the management of patients with severe selected dermatoses.

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Liposuction in Dermatology

In the amazingly short time since liposuction was first introduced to cosmetic surgeons in the United States, it has been standardized and vastly improved. American ingenuity and manufacturing preeminence have produced many new and better suction pumps and cannulas. Today a properly selected patient can safely have a liposuction operation under local anesthesia on an outpatient basis, although for patients requiring large amounts of fat removed, general anesthesia may be preferred.

Most office-based surgeons use a variation of the wet technique. A hypotonic saline solution, hyaluronidase, epinephrine and lidocaine are injected into the area to be suctioned. This provides adequate anesthesia, and the dilute epinephrine reduces the bleeding. The use of the wet technique seems to reduce or totally eliminate the problems with fluid balance and blood loss. It is not uncommon to stand a patient up during the procedure so that the gluteal crease and the lateral thighs can be accurately sculptured.

Narrower cannulas are generally used today: 4- and 6-mm cannulas for the trunk and proximal extremities and 3- and 4-mm cannulas for the submental and jowl areas. There are several new designs for the tips of the instruments, including a spatula-shaped tip, multiple ventral openings and partial frontal openings. All of these changes have made the operation physically easier for physicians and far less traumatic for patients.

As is true with most new techniques, the success rate goes up and the complication rate goes down as physicians become more knowledgeable in selecting patients. Nowadays, very gratifying results are consistently produced on the lower abdomen, the lateral thighs and the medial knees. Good results are commonly achieved on the upper abdomen, the medial thighs and the ankles. The "love handle" area requires more experience and judgment because often it is a fold of heavy skin rather than excess fat. Also, the results after suction of that area may take as long as 12 months before the full benefit is achieved.

Liposuction can be used alone or in conjunction with a face-lift procedure for the submental and jowl areas. Many surgeons use liposuction as an adjunct to the face-lift procedure, both to improve the results and also as a technical aid to cleaning fat from the platysma muscle or undermining the cheek flap.

Some giant lipomas can be treated with liposuction. Male gynecomastia will respond to such treatment. Occasionally the lateral and medial arms have a fat collection that is successfully treated by liposuction.

The major complications include fluid loss, blood loss, infection and hematoma. Some of these complications have been catastrophic, with infections leading to disseminated intravascular coagulation, and there are reports of deaths due to pulmonary emboli. There are also reports of visceral perforation. As tragic as these events are, the incidence is low and the causes are presumed to be associated with poor surgical judgment, poor follow-up, inadequate fluid replacement or inadequate attention to sterility. Almost all of these major complications have occurred in patients who are treated in a hospital general surgery or come-and-go surgery. The experience to date thus does not support the contention of those malpractice insurance carriers who want to limit their coverage to only those physicians with hospital privileges for liposuction operations.

Minor complications include irregular or wavy skin. Most of the time this will soften in 6 to 12 months. Numbness is one of the most common complications, but its incidence does not exceed 5% of patients. The frequency of all of these complications is acceptably low in exchange for the gratifying results in an area where previous techniques were woefully inadequate.

Liposuction has made us aware that body fat differs genetically. Some areas are slow to catabolize by ordinary diet restriction. Studies are under way to examine the metabolic variation of localized fat collections and to assess the overall effect on metabolism when selected amounts of fat are removed.

This procedure is appropriately gaining popularity as the medical profession is better able to select and deliver satisfactory results in a safe setting. Many persons with figure fault deformities have had to deal with the social consequences. Before liposuction procedures, such persons had to live in a semistarved state, and even that was not always helpful.

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Using Lasers in Skin Surgery

Laser is an acronym for *l*ight *a*mplification by *s*timulated *e*mission of *r*adiation. The basic principle of lasers is that a high-intensity monochromatic collimated beam is directed to target tissue and produces localized tissue injury.

The most commonly used apparatus today is the carbon dioxide laser, which emits a beam in the far infrared portion of the light spectrum. This laser light is absorbed by water and produces localized tissue vaporization or coagulation as the tissue is rapidly heated. The other frequently used laser is the argon laser, which produces a blue-green light in the visible spectrum that is selectively absorbed by hemoglobin and results in coagulation.

The CO_2 laser has a wide variety of uses in dermatology, including vaporizing benign cutaneous neoplasms and warts, excising skin cancers, removing superficial pigmented lesions such as lentigines or seborrheic keratoses, removing tattoos and excising vascular proliferations such as port-wine stains or cavernous hemangiomas. The argon laser is mainly used to ablate vascular malformations and vascular tumors, but is also used to treat some benign pigmented lesions, warts, benign tumors and tattoos.

Laser ablation of abnormal tissue does not differ qualitatively from other modes of tissue destruction. There are, however, a number of important advantages to this mode of treatment. Extreme localization of the beam minimizes perilesional injury. The laser is excellent at cauterizing small blood vessels so that a dry operative field and reduced postoperative edema are obtained. The wound is sterilized by the laser beam and, thus, one may operate in a contaminated field. In addition, postoperative pain is often less than with other destructive procedures because small nerve endings are sealed.

There are several disadvantages to laser surgical procedures. The equipment is expensive and not highly portable. In addition, it is technically sophisticated and, thus, may be prone to major malfunctions. Because the beam is so powerful, human error in its use can lead to signficant cutaneous burns or eye injuries.

The near future should bring greater use of a newly developed tunable dye laser that uses a carefully chosen wavelength (577 nm), which is very selectively absorbed by blood. Thus, abnormal vascular channels can be ablated without damaging surrounding normal structures.

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Dysplastic Nevi—Markers and Precursors of Malignant Melanoma

The incidence of malignant melanoma is doubling every decade and will affect 25,800 Americans this year, of whom 5,800 will die. No effective treatment is currently available for those with metastatic disease, the only cure for melanoma being early detection and prompt surgical excision.

More than half of those in whom melanoma develops are marked by a recently discovered, clinically distinctive type of nevus that shows histologic dysplasia. "Dysplastic" nevi often appear during adolescence, giving alert clinicians time to spot affected persons and to train them in self-examination and periodic professional examinations in time to intercept developing melanomas during the highly curable, superficial radial growth phase. Inheritance is autosomal dominant with a high degree of penetrance but with a great variety of phenotypic expression, varying from more than 50 large, irregularly pigmented lesions in more severely affected cases to the more common presentation of several or even solitary small, subtle lesions within the same family. Unlike common nevi, dysplastic nevi may continue to appear lifelong, past young adult years.

Any "new" or changing nevus occurring after age 30 should be carefully examined for evidence of melanoma or dysplasia. Identification requires bright, close, tangential, incandescent illumination (preferably halogen) within 30 cm (12 in) of the skin with an examination lamp. Gently stretching the skin unfolds the skin creases, revealing early signs of border irregularity or suffusion of pigment into surrounding skin, speckled or irregular patterns of brown, black or faint pink and sometimes a relatively lighter pigment in those creases. Most dysplastic nevi have at least a small ring of flat pigment surrounding them, and many are only minimally elevated. Confirmation requires histologic examination, preferably of two or three of the most suspicious lesions. In patients with the dysplastic nevus syndrome, about a third of melanomas arise from the dysplastic nevi themselves, a third from normal-appearing nevi and a third apparently de novo from the surrounding skin.

In families with several members affected with dysplastic nevi and with a history of multiple melanomas, an affected person's risk of melanoma developing by age 59 may be 56%. As much as 7% of the white population in the United States may be affected with dysplastic nevi but are without a family history of multiple melanomas. The lifetime risk of melanoma in these persons is under investigation and has been estimated at 6%, high enough to warrant monthly self-examinations, periodic professional complete skin examinations and precautionary sun-exposure and sunburn-reducing techniques. Family screening of their relatives by the author in a collaborative study with the National Cancer Institute has detected some previously undiagnosed melanomas.

For color photographic resources, write to:

- The Skin Cancer Foundation, 245 Fifth Ave, New York, NY 10016.
- The Atypical Mole and Melanoma Education Foundation, PO Box 2099, Napa, CA 94558.
- Norcal Mutual Insurance Company, Loss Prevention Dept, 333 Market St, San Francisco, CA 94105 (videotape entitled "Melanoma: A costly oversight.")

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Contraindications for Using Topical Steroids

In prescribing the topical use of steroids, physicians must be aware that there are certain conditions when topical steroids are relatively or absolutely contraindicated. They must also be alert to the fact that any steroid, and in particular potent and superpotent agents, may in themselves cause topical and systemic side effects.

Using topical steroids to treat primary bacterial infections is not only *absolutely contraindicated,* but the steroid may mask the bacterial infection by its vasoconstrictive and anti-inflammatory properties, making diagnosis and treatment even more difficult. Impetigo, furuncles and carbuncles, paronychia, ecthyma, erysipelas, cellulitis, lymphangitis and erythrasma are all conditions in which the use of topical steroids is to be avoided.

Some eczematous dermatoses, blistering eruptions and papular urticaria due to bites—such as scabies—may become secondarily infected. These macerated, inflamed lesions may be treated with topical steroids in conjunction with an appropriate anti-infective agent. While topical steroids may help to reduce pruritus and inflammation, they should never be the first line of therapy directed at the infection itself.

Relative contraindications include *Candida* and dermatophytes—because these organisms grow well on macerated skin, the use of a topical steroid in conjunction with an appropriate anti-infection agent may occasionally by appropriate; herpes simplex and zoster—customary treatment must be directed at the virus itself, but some physicians use a mild- to mid-strength topical steroid to reduce the burning and itching of these disorders and even intralesional steroids in an attempt to reduce the risk of postherpetic neuralgia in patients with zoster. Extreme caution must be used when topical steroids are applied to the face.

Potent and superpotent agents—betamethasone dipropionate (Diprolene), clobetasol propionate (Temovate) and diflorasone diacetate (Psorcon)—have a higher propensity to cause topical side effects such as atrophy, stria, purpura or even ulceration, particularly when used in thin-skin areas (periorbital and groin regions), under occlusion or in a pediatric patient. Acnelike eruptions—rosacea, perioral dermatitis—may occur on the face with virtually any topical steroid. Glaucoma has been implicated in many topical agents used around the eyes.

Practitioners must be aware that package inserts for some superpotent agents warn against the use of occlusion or in pediatric patients and require a "rest" period after two weeks of use to reduce the risks of topical and systemic side effects, especially adrenal suppression.

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Bowenoid Papulosis

Bowenoid papulosis is a unique and distinctive neoplasm of the genitoanal region recently shown to be virally induced. Known by this name and several others over the past 30 years, the condition has been unified by histopathologic changes similar to squamous cell carcinoma in situ (Bowen's disease).

Bowenoid papulosis primarily affects sexually active young adults and appears clinically as multiple skin-colored or pigmented papules on a circumcised penile shaft or labia majora and minora, but it may occur anywhere in the genitoanal region. The papules may be discrete, grouped, linear, confluent, smooth or verrucous in morphologic appearance and texture. They are usually asymptomatic but occasionally itch. Macular and leukoplakia-like lesions have been described.

The differential diagnosis includes warts, condyloma acuminatum, seborrheic keratoses, nevi, lichen planus and other papular conditions. Generally the larger red patches and plaques of Bowen's disease and erythroplasia of Queyrat are not confused with bowenoid papulosis.

On histopathologic examination, however, bowenoid papulosis bears a remarkable similarity to the atypia of Bowen's disease, with only minimal differentiating features. Because of this potential confusion and unawareness of the existence of bowenoid papulosis, unnecessary ablative procedures have been done in the past.

The natural history of this condition ranges from spontaneous regression over a period of months to rarely evolving into invasive squamous cell carcinoma. Without treatment, most remain benign and unchanged.

Prior suspicions of a viral cause have been confirmed by the identification of human papillomavirus (HPV) type 16. Other recent studies have linked bowenoid papulosis with HPV 16-induced cervical dysplasia and neoplasia. There is growing evidence that this disease is sexually transmitted, thus raising many new concerns regarding an otherwise benign process.

Therapeutic modalities that have been advocated include topical application of retinoic acid or 5-fluorouracil, cryotherapy, electrodesiccation with or without curettage, shave biopsy, surgical excision, vaporization by laser and interferon injection. Clinicians should use selective judgment in choosing an appropriate conservative modality, as some cases spontaneously regress and malignant degeneration is rare. Because recurrence of bowenoid papulosis is frequent, a biopsy should be taken of lesions recalcitrant to standard therapy to exclude malignancy.

In view of assumed sexual transmission and a proven association with cervical neoplasia, our emphasis should be on prevention. A patient with bowenoid papulosis should be thoroughly educated regarding HPV infections and the use of condoms (or abstinence) strongly advocated. Patients should be routinely examined for recurrence. Female patients or sexual partners of male patients with this disorder should be followed with regular cytologic, colposcopic and histologic examinations.

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Cutaneous Manifestations of the Acquired Immunodeficiency Syndrome (AIDS) and AIDS-Related Conditions

Infection by the human immunodeficiency virus (HIV) and subsequent depletion of immune function may involve a variety of organs in the acquired immunodeficiency syndrome (AIDS) and AIDS-related conditions (ARC). The skin as a mirror of internal disease provides a readily accessible diagnosis of AIDS or ARC in many cases.

Viral and fungal infections of unusual severity were recognized early on an harbingers of AIDS or ARC. Other infectious agents occurring as unusual skin lesions have been reported recently. Herpes simplex virus, *Cryptococcus neoformans, Histoplasma capsulatum* and *Mycobacterium avium-intracellulare* may appear as skin ulcers, vesicles or granulomas. Herpes simplex virus in particular may cause severe, chronic perirectal ulcerations and abscesses. Mucosal infections with *Candida albicans* usually present as white patches in the buccal and oropharyngeal areas. Hairy leukoplakia—white roughened areas along the sides of the tongue—has recently been linked with the Epstein-Barr virus and occasionally *Candida,* herpes and human papillomavirus. Florid presentations of warts and molluscum contagiosum in a person with risk factors for HIV infection should suggest close observation and counseling.

In about 40% to 50% of patients with AIDS or ARC, a malignant process will develop during the course of the disease. An aggressive form of Kaposi's sarcoma, associated with profound lymphocytic depletion, became one of the criteria for the diagnosis of AIDS in the early 1980s. Vigorous treatment of Kaposi's sarcoma has resulted in worsening of the patient's overall condition in many cases. Other malignant disorders include squamous cell carcinoma, especially of the perirectal area, and lymphomas of both the Hodgkin's and undifferentiated varieties. Treatment of these conditions is usually of some benefit.

Common skin conditions that may be recalcitrant to conventional therapy when associated with AIDS or ARC include psoriasis and seborrheic dermatitis.

It is estimated that between 1 million and 1.5 million persons in the United States are infected with HIV (Centers for Disease Control, Atlanta). In a person with risk factors for HIV infection, examination of skin and mucous membranes may yield an early diagnosis of AIDS or ARC.

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Short-Contact Anthralin Therapy for Psoriasis

Anthralin was first used in the 1920s as a treatment of psoriasis vulgaris. Over the years, it has been shown to be one of the most effective topical treatments of stable psoriasis. No systemic toxicity has been reported. Its side effects, however, of staining the skin and everything with which it comes in contact, as well as irritating uninvolved skin, have limited its use. Efficacy and side effects are both dose-related and may be difficult to separate. Many schedules have been devised to maximize efficacy and patient compliance while reducing side effects; until recently, however, anthralin use was practically impossible in an outpatient population.

In 1980 the concept of short-contact therapy with anthralin was developed. Basically, this involves applying higher concentrations of anthralin to suitable psoriatic plaques for shorter periods of time than with traditional several-hours or overnight treatment with an anthralin hard paste. After an appropriate period, the anthralin is removed. The basis for this treatment lies in pharmacokinetic studies that show that anthralin penetrates faster through involved psoriatic epidermis than through uninvolved epidermis. At the time of removal, penetration has occurred mainly in the diseased skin. Controlled studies have shown that short-contact therapy is effective in clearing psoriasis.

Various short-contact regimens have been used. Patient compliance is optimal when periods of application from 20 to 60 minutes are used. This therapy also requires an intelligent and motivated patient because side effects are not infrequent. Stable plaque-type psoriasis is the preferred indication for this regimen. Anthralin concentrations from 0.1% to 2.0% have been used in a variety of vehicles. Creams and ointments provide greater patient compliance than hard paste; newer formulations are being developed. The initial contact time should be from 15 to 20 minutes, then the anthralin should be thoroughly removed with a solvent suitable for the base (soap or petrolatum) and an emollient applied to the skin. Therapy should be interrupted if persistent irritation occurs or if psoriasis is rapidly spreading. Topical steroids may be used to treat anthralin irritation.

The combination of short-contact anthralin therapy with other psoriatic treatment modalities, such as ultraviolet A or B light, tar, retinoids, topical steroids and psoralen plus ultraviolet A light, may improve the therapeutic response. Further studies are being conducted with such combinations in attempts to achieve maximum psoriatic clearing in an outpatient setting.

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Unconscious on a Corner ...

DAVID HILFIKER, M.D.

The police brought Mr. W. to the emergency room. They had found him unconscious on a corner in Washington, DC, one more drunk littering the city, disturbing our view. Fifty-two years old, black, dressed in rags, homeless, he was no different from the countless other tragedies that find their way to the ER. But Mr. W. was not drunk. His jaw had previously been broken and—at another emergency room—wired shut to heal, whereupon he had been discharged back to the streets. He couldn't eat or drink enough to keep himself going, and so it was that the police found him, severely dehydrated, unconscious, close to death.

Mr. W. was initially rehydrated with intravenous solutions, but his condition deteriorated, and he was readmitted to the intensive care unit. Tests were ordered, examinations repeated, consults held. At last it was clear: Mr. W. had the syndrome of inappropriate antidiuretic hormone secretion with life-theatening hyponatremia. Fluids were limited to 800 mL per day, his physicians went out of their way to find demeclocycline (an expensive medication not routinely available at the hospital), and Mr. W. was slowly and painstakingly nursed back to health.

Without reference to the chart, his physicians explained to me in detail his prognosis and continuing treatment; clearly they knew their patient well. Mr. W. would be returning to a city shelter in a few days and the medical team would follow him up in the outpatient clinic. And as I reviewed the chart, I was impressed with our city hospital. Compassionate, competent care had obviously been rendered this homeless man without reference to his finances, social class, or culture. In my work with the poor, I was used to stories that ended differently; Mr. W.'s story gave me hope for the wounded of our society.

As I walked into Mr. W.'s room, however, my hopes dimmed. I was shocked by his emaciation, by the emptiness in his eyes, by the light slowly but definitely extinguishing. He was confused. Now "ready for discharge," he could not remember the day of the week, the month, or even guess the year; he seemed unaware he was in a hospital. Clearly Mr. W. was demented.

How could he be discharged to a shelter? How would he manage to take his medicines if he couldn't even remember the day of the week? How would he limit his fluid intake if he couldn't understand instructions? How could these obviously compassionate physicians send this man back to an overnight shelter from which he would be sent out into the street to forage for himself every day? Mr. W. had been well treated initially; why was he being abandoned now that his treatable condition had been corrected?

I talked to his physicians, trying to understand. No, they didn't really know what the shelters were like. They didn't know that there was essentially no supervisory staff, that meals were unavailable, that ten men would be herded together in one room shared with cockroaches and other vermin, that alcoholism and random violence were uncontrollable. Without a conscious decision, it has become policy in our city to consider overnight shelters as places of disposition for emergency rooms, jails, prisons, and hospitals. I could hardly blame Mr. W.'s physicians for following usual policy.

The issue, however, was deeper. When Mr. W. first entered the hospital, there was indeed something that his physicians could *do* for him. They had the knowledge, they had the resources, and they could *do some good.* But now that time was over and he was "cured." There were no more diseases to treat. Furthermore, there was no place to send him. In Washington, nursing home placement for the indigent can take over six months, and the physicians knew there would be intense pressure to discharge their patient from his expensive hospital bed. They knew no other options. So, their honest compassion had no place of expression and they had withdrawn. They hardened themselves to the reality of Mr. W.'s plight and talked about discharge to a shelter as if that were a legitimate plan for a demented old man who needed constant supervision.

Are not many of us like Mr. W.'s physicians? Within us are deep wells of compassion that—given the right set of circumstances—can be tapped to generate enormous generosity and creativity. But the truly broken—the chronically schizophrenic, the alcoholic, the homeless, the very poor—seem beyond our caring. Their needs are overwhelming, the structures that reach out to them so few. We don't know what to do, and so we turn away, offering nothing. Compassion is exiled.

From Community of Hope Health Services and the Christ House Medical Recovery Shelter, Washington, DC.

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After four years of working in the inner city, it is clear to me that medicine has largely abandoned the poor. Private medicine in Washington is inaccessible without insurance coverage. We called at random 50 private primary care physicians; less than half accept Medicaid for payment. Fewer than 10% have any provision for reducing fees or for deferred payment for uninsured, indigent patients. Unless one can pay the $75 to $150 office visit fee in advance, there is simply no way to get in the door.

And so the poor must rely on the public sector, on the good will of a society that has no use for them. Government budget cuts are no longer news, and an aging, fragmented bureaucracy delivers distinctly second-class care.

The reasons are multiple and complex, but the final reality is painfully obvious. The poor are denied access to adequate health care. Every day we see the scars among our patients: an ataxic, demented alcoholic who can barely balance with a walker is discharged to live on the streets; a hypertensive woman suffers a stroke because she cannot afford her medicines; a one-legged man with the remaining foot frostbitten is discharged from an emergency room with instructions to soak what is ultimately shown to be osteomyelitis. What has happened? How can the richest nation in the history of the world permit such tragedies?

The "monetarization"[1] of private medical care and the inadequacy of the public system are certainly the most important reasons for the abandonment of the poor. It is difficult for us physicians to maintain our average $108,000 annual salary and still provide care to the indigent. Medicine is quickly changing from a servant profession into a business and it is the poor who are most deeply affected. And it is also easy to blame a public system in which only 31% of the poor even *qualify* for Medicaid,[2] of which bureaucracy and second-class care are the hallmarks. But there are more subtle reasons than money and an unresponsive bureaucracy for the medical abandonment of the poor.

I would suggest that it is difficult to be a highly trained physician and work with the poor. Most of us come from a different culture and do not understand, for instance, that the very poor are often so overwhelmed by the emotional, social, and financial stresses in their lives that they simply cannot comply with our evaluation or treatment. If a patient cannot articulate his history, has a fourth-grade education, compounds his hypertension with alcoholism, cannot afford laboratory evaluation or medications, is unable to return for consistent follow-up because of problems at home, and cannot afford a place to live, we who are trained to treat diseases[3] will feel at sea. The physicians who treated Mr. W. could express their compassion by diagnosing and treating his rare hormonal disorder, but they were deeply frustrated by his dementia and his homelessness, by the years of despair that had left him without resources. We who are used to the efficiency and power of conventional doctoring find this new work very demanding emotionally.

Most frustrating is the absence of self-esteem among my patients. Because so many come out of generations of poverty, they *know* that they have little value in our society; it has been demonstrated to them over and over again. There is little sense that anything they can do will make a real difference in their lives.

And so, too often my medicine doesn't work; my attempts at care fail completely. Often I feel that the most I can do is be present, be there when I can, help a little, and try to keep my own head above water. There is little sense of accomplishment for me as a physician, and I become discouraged.

There is a deeper reason, too. To work with the very poor—especially the inner city poor—is often to work with people who are very broken. Even the children have such wounds at seven and eight—or even at two or three—that a normal life would be a miracle. Some of these people will never be healed, if by "healed" one means becoming a functioning member of society.

It is not easy to open ourselves to the pain, suffering, and vulnerability of the poor. We have to confront our own limitations. We know that it does little good to offer a medication when our patient needs a home, a meal, a family, love, money, and a thousand other things that we ourselves take for granted. We also confront the limitations of a society that refuses to accept responsibility for its broken ones. And so it is tempting to turn away, offering nothing, sparing ourselves the deep frustration.

The medical abandonment of the poor thus becomes a paradigm for society's refusal to face its own brokenness. We herd the poor into ghettos so that we do not have to face our own vulnerability, our own dark sides. Our own woundedness can thus be denied for a little longer while the sores fester unseen in "those others." Sölle[4] has suggested that when we thus participate in injustice without struggling against its inhumanity, we are overcome by an "objective cynicism" that leaves us alienated and hopeless, choosing death. We find ourselves deeply wounded by our refusal to care for the poor.

What can be done? Clearly our institutions need to change. Clearly some form of national health coverage available to all the poor is required. Without guaranteed health insurance, nothing else will be of much use. But, given the current social and political atmosphere, that change will be a long time coming. There is the danger that by focusing exclusively on what needs to happen in the political system, we will avoid the deeper, more personal transformation that is also necessary.

Can we who are in private medicine open, say 15% of our practice to those who cannot afford the full fee? Can we accept Medicaid—with all its paperwork, discounts, and headaches—joyfully as an opportunity to participate with our society in ministry to the poor and oppressed? Can we who belong to medical institutions press our employers to do the same?

The first step must be to bring the poor into our practices. In our city, over 200 private consultants—coordinated by the Archdiocese of Washington—have volunteered to serve as a referral network for indigent patients; radiology and laboratory services have been similarly offered. It is only a beginning, of course, but it opens us to the possibility.

I am beginning to realize that we in medicine need the poor to bring us back to our roots as a servant profession. Medicine drifts understandably yet ominously toward the technical and the economically lucrative, and we find it difficult to resist. Perhaps we *need* the poor at this very moment to bring us back to ourselves. The nature of the healer's work is to be with the wounded in their suffering. Can the poor in their very vulnerability show us how?

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M.D. Health Plan Enrollment Climbs

Employee enrollment in M.D. Health Plan has now begun to take off, with MDHP membership passing the 2,000 mark as the new year begins, better than earlier projections. This initial membership represents a mix of large, medium and small companies distributed throughout the eight counties of the state. Enrollments continue at an increasing pace, as the MDHP Marketing Department works with an expanding statewide network of independent agents to offer client companies coverage for their employees, many of whom now have an HMO option for the first time ever.

Initial Stock Offering to End

The impressive MDHP list of participating physicians steadily grows longer, as the deadline marking the end of the initial stock offering period approaches. (All subscription agreements, checks, loan applications and IPA agreements must be dated by February 5, 1988, for names to be included in the new MDHP Physician Directory, subject to IPA credentialing approval.) The initial marketing successes and still increasing CSMS physician support augur well for M.D. Health Plan in the new year of 1988.

Marketing Staff Expands

The MDHP Marketing Department has added three new account executives this month to help expedite response to the rapidly increasing interest of Connecticut's business community. A truly statewide health plan which combines an unmatched benefits package with patient access to the state's largest and still-growing IPA panel of physicians is highly attractive to employers. The inherent value of physician control for assuring quality, access, and preventive services, unencumbered by outside middlemen, is plain for all to see.

Departmental Reorganization

In keeping with this emphasis, M.D. Health Plan has restructured its Health Services Department to provide separately staffed offices for Professional Relations, QA/UR Services, and Health Education and Promotion Activities, all under the direction of the MDHP Medical Director and Vice-President for Health Services, Guy W. Van Syckle, M.D. The CSMS-IPA Medical Director, Kenneth Robbins, M.D., and his staff oversee the recruitment and credentialing of MD's and contracted non-MD providers under IPA Board-approved standards. The all-physician CSMS-IPA Board also serves to adopt and revise QA, UR, and risk management criteria through its QAURRM Committee, and to act on appeals by IPA members.

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RADIOLOGY CORNER

Nancy Allen, M.D., Series Editor
Staff Radiologist, Waterbury Hospital
Health Center, Waterbury, CT

Case 1-1988

Thirty-eight Year Old Man with Groin Pain

MARY B. FRIAR, M.D.

History

A 38-year-old male with increasing right groin pain of several months duration was referred for radiologic examination.

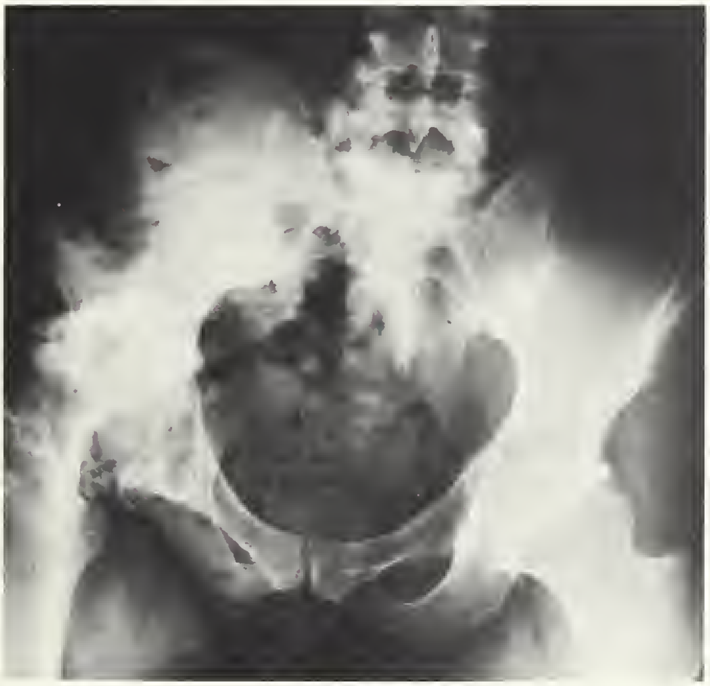

Figure 1

Lytic lesion involving right ilium. Hemophilic arthropathy involving right hip.

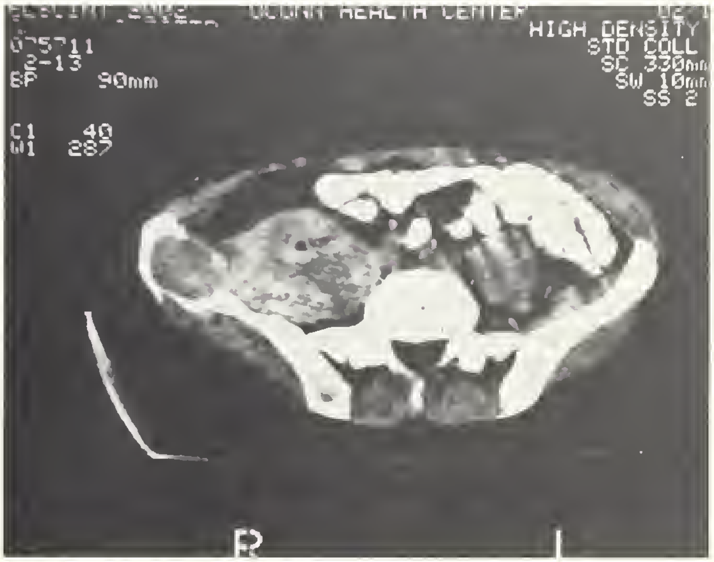

Figure 2

ST mass in right aspect of pelvis with extension into right ilium.

Diagnosis

Hemophilic pseudotumor involving right pelvis in known hemophiliac.

Discussion

Hemophilia is an X-linked recessive hereditary disorder. In Type A or classic hemophilia, which has an incidence of one in 10,000, there is a deficiency in Factor VIII. In Type B or Christmas disease, which is one-sixth to one-half as frequent as Type A, there is a deficiency in Factor IX. The functional activity of Factor VIII or IX determines the degree of the defect: 5% to 25% of normal activity is mild, 1% to 5% is moderate, and less than 1% of normal activity is severe.

MARY B. FRIAR, M.D., is a fourth year resident at the University of Connecticut School of Medicine, Department of Radiology, Farmington, CT.

This case introduces the appearance of a new occasional feature in *Connecticut Medicine*, radiographic cases of general interest to the physicians in the community. It will be published from time to time under the heading of "Radiology Corner." We hope that you will enjoy this new feature, and encourage your residents to submit their cases. We suggest that you read the clinical history, look at the x-ray, and try to form an opinion before going on to the answer and discussion.

The most common site of hemorrhage is the joint. Hinge joints, such as the knee, elbow, or ankle, are more prone to hemorrhage than ball and socket joints, such as the shoulder or hip.

The radiographic changes in both Types A and B are identical. Hemarthrosis results in joint distention, osteopenia secondary to hyperemia and disuse, narrowing of the cartilagenous joint space, sclerosis, marginal erosions, subchondral cysts and, osteophyte formation. Classically, hemophilic changes involving the knee include a widened intercondylar notch, a prominent bulbous appearance of the femoral condyles, and squaring of the inferior patella. In the ankle, there is flattening and angulation of apposing surfaces which result in a tibiotalar slant. There is irregularity and enlargement of the radial head classically.

The term pseudotumor refers to extra-articular hematomas which occur in one to two percent of severe hemophiliacs. There are three types:

I. Confined solely to soft tissues
II. Originating in soft tissues, but eventually involving bone
III. Primarily involving bone and originating within various medullary sites or subperiosteally. This is rare in adults, but is seen in children affecting distal small bones of the hand and foot.

Type II pseudotumors occur where there is proximity of large muscle masses to bone. In adults, they occur most commonly in the femur and slightly less commonly in the pelvis, primarily the ilium, as in this case. The cause is not fully understood, but trauma is thought to be a factor. Cortical erosion is due to pressure necrosis by the hematoma. There is often periosteal elevation with new bone formation in the configuration of bony "struts" arising from periosteum.

Computerized tomography (CT) and ultrasound (US) are both used to evaluate pseudotumors. They are able to define the general contour and internal consistency of the lesion, demonstrate the distribution and extent of the lesion and its relationship to adjacent anatomic structures, and aid in treatment planning. CT is more useful than US in determining the extent of bony destruction. Nonionizing US is useful in evaluating the progress or recurrence of a lesion.

The diagnosis of pseudotumor is not usually difficult as the patient is usually known to be a hemophiliac. The differrential diagnosis includes an abscess, Ewing's sarcoma, osteosarcoma, and chondrosarcoma.

Treatment of pseudotumors: In the early stages, conservative medical treatment with coagulation factor replacement and immobilization are used. If the lesion is small and acute, radiation treatment has been used to decrease the lesion's size and to decrease pain. If the lesion is large, progressive, nonresponsive, or chronic, it often requires surgical excision including the entire cyst wall. Obviously, these patients are a surgical risk and require factor replacement.

This patient had surgery for excision of the pseudotumor.

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The Medical Courtesy Card Program (Connecticut Medicare Assignment Program)

Common Questions

The Medical Courtesy Card Program is a program for Medicare eligible lower income seniors. The program is sponsored and administered by the physician members of the Connecticut State Medical Society in partnership with its County Medical Associations and in conjunction with the State of Connecticut's Department on Aging. The program is designed to provide lower income Medicare enrollees with automatic acceptance of Medicare assignment for physicians' services whenever they visit an enrolled physician.

Q. **Which physicians should be interested in enrolling?**

A. Any physician who is a Medicare provider and who is willing to accept assignment for lower income senior patients.

Q. **As a Medical Courtesy Card Enrolled Physician, what benefit am I providing to senior patients who hold the Medical Courtesy Card?**

A. You are agreeing to accept **the assignment method of payment** for Medicare covered services. This means:

*Your office submits the claim to the Medicare carrier for direct payment. *When doing so you must submit a signed Health Insurance Claim Form (HCFA 1500) with Box 26, "ACCEPT ASSIGNMENT," check* yes.

(This form must also accompany a Super Bill submission.)

*You agree to accept the reasonable charge, as determined by the carrier, as the full charge for covered services on that claim.

*You bill the patient for the 20% coinsurance and $75 deductible charges that Medicare does not reimburse you.

Q. **Who is eligible for the card?**

A. Any person currently enrolled in the Medical Insurance portion of Medicare (Part B), with an annual income of no more than $19,950 if single, $24,000 if married. The person's adjusted gross income for federal income tax purposes, plus any other income not subject to federal taxation (such as Social Security) is considered when determining income eligibility.

Q. **Where do people apply?**

A. Applications are available from the Connecticut State Medical Society at 160 St. Ronan St., New Haven, CT 06511 and from County Medical Associations. Local Senior Centers, Municipal Agents, and physicians' offices may also have applications available.

The State Society and County Medical Associations do all of the application screening and issue all of the cards. If you would like a supply of applications for your office, please contact either your State or County office.

Q. **How do seniors use the card?**

A. The seniors are told to bring the card whenever they visit a physician enrolled in the Courtesy Card Program, present the card to the office staff, and the physician's office will automatically accept assignment for their covered medical care. A senior holding a ConnPACE card is told to present that card with his/her Medicare card and the physician's office will recognize it as a Medical Courtesy Card.

Q. **What is a ConnPACE card?**

A. ConnPACE is the State of Connecticut's prescription drug program for lower income elderly. Although ConnPACE is a separate program, *state law* allows a Medicare recipient to use their ConnPACE card as a Medical Courtesy Card. A Medicare eligible person will not be issued a separate Medical Courtesy Card.

The Medicare carrier will gladly answer any questions a physician might have concerning the submission of Medicare claims and can be reached at 269-5207.

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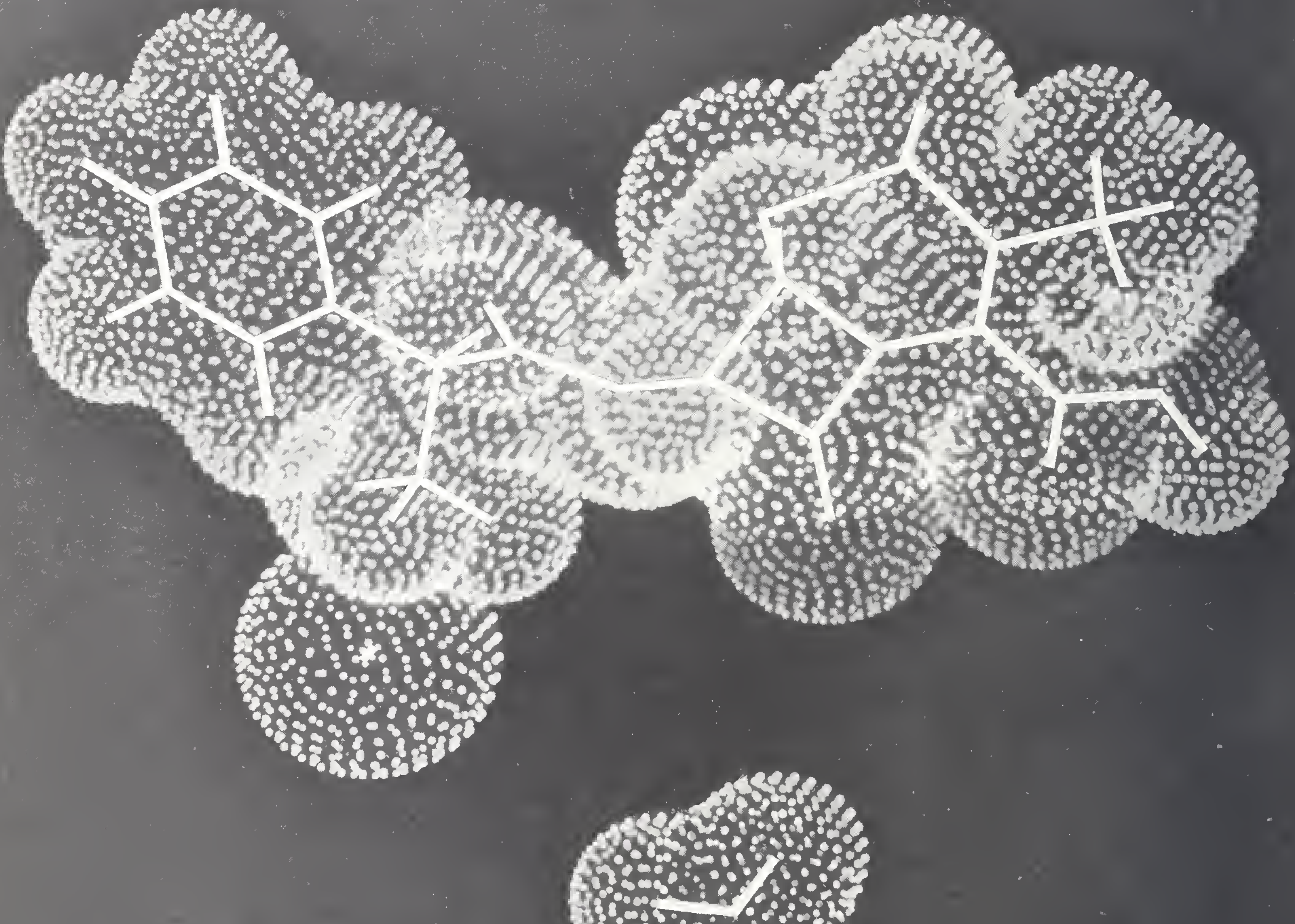

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Bone infections caused by susceptible strains of *S aureus* and/or *Proteus mirabilis.*

Genitourinary tract infections, including acute prostatitis, caused by susceptible strains of *Escherichia coli, P mirabilis,* and *Klebsiella* sp.

Contraindication: Known allergy to cephalosporins.

Warnings: KEFTAB SHOULD BE ADMINISTERED CAUTIOUSLY TO PENICILLIN-SENSITIVE PATIENTS. PENICILLINS AND CEPHALOSPORINS SHOW PARTIAL CROSS-ALLERGENICITY. POSSIBLE REACTIONS INCLUDE ANAPHYLAXIS.

Administer cautiously to allergic patients.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics. It must be considered in differential diagnosis of antibiotic-associated diarrhea. Colon flora is altered by broad-spectrum antibiotic treatment, possibly resulting in antibiotic-associated colitis.

Precautions:

- Discontinue Keftab in the event of allergic reactions to it.
- Prolonged use may result in overgrowth of nonsusceptible organisms.
- Positive direct Coombs' tests have been reported during treatment with cephalosporins.
- Keftab should be administered cautiously in the presence of markedly impaired renal function. Although dosage adjustments in moderate to severe renal impairment are usually not required, careful clinical observation and laboratory studies should be made.
- Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.
- Safety and effectiveness have not been determined in pregnancy and lactation. Cephalexin is excreted in mother's milk. Exercise caution in prescribing Keftab for these patients.
- Safety and effectiveness in children have not been established.

Adverse Reactions:

- *Gastrointestinal,* including diarrhea and, rarely, nausea and vomiting. Transient hepatitis and cholestatic jaundice have been reported rarely.
- *Hypersensitivity* in the form of rash, urticaria, angioedema, and, rarely, erythema multiforme, Stevens-Johnson syndrome, or toxic epidermal necrolysis.
- *Anaphylaxis* has been reported.
- *Other reactions* have included genital/anal pruritus, genital moniliasis, vaginitis/vaginal discharge, dizziness, fatigue, headache, eosinophilia, neutropenia, and thrombocytopenia; reversible interstitial nephritis has been reported rarely.
- Cephalosporins have been implicated in triggering seizures, particularly in patients with renal impairment.
- *Abnormalities in laboratory test results* included slight elevations in aspartate aminotransferase (AST, SGOT) and alanine aminotransferase (ALT, SGPT). False-positive reactions for glucose in the urine may occur with Benedict's or Fehling's solution and Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

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Due to susceptible strains of *Staphylococcus aureus* and/or β-hemolytic streptococci.
Due to susceptible strains of *Escherichia coli, Proteus mirabilis*, and *Klebsiella* sp.
Due to susceptible strains of group A β-hemolytic streptococci.

Aversion Therapy

AMA COUNCIL ON SCIENTIFIC AFFAIRS

Aversion therapy is a series of techniques designed to reduce unwanted or dangerous behaviors. The most common applications of these techniques are to obesity, tobacco smoking, sexuality, oral habits, self-injurious and aggressive behaviors, and substance abuse. Most enthusiastic reports suffer from lack of control groups and control procedures. At this time, the best accepted application is for the treatment of chronic self-injurious behavior.

Aversion therapy is aimed at reducing unwanted or dangerous behavior through the use of negative experience—pairing the behavior with unpleasant sensations or aversive consequences (punishment). These techniques are based on the principles of learning theory and behavior modification. Most behavioral interventions today are based on a rearrangement of existing reinforcers. Aversion therapy is unusual in the sense that it introduces new factors into the experience of the treated individual. Although extensive physiologic and animal research has been done to refine the administration of punishment,[1] its use remains controversial on ethical grounds. Aversion therapy differs from classic punishment by its use of "natural consequences" (eg, vomiting with drinking), as opposed to introducing a foreign consequence (eg, electric shock). However, the two are often used interchangeably. Clinical applications of aversive techniques have been the focus of debate for many years among educators, mental health practitioners, and medical professionals.[2,3]

Aversive techniques have been applied to a wide variety of problems and patient groups. They vary in intensity and include verbal rebuke, "time out," imagined noxious scenes (covert sensitization),[4] unpleasant tastes, physical restraint, corporal punishment (eg, hitting, pinching), electric shock, and drug-induced nausea and vomiting or repiratory paralysis. Wilson and Davison[5] stress the importance of matching the aversive stimulus to the problem (eg, taste/nausea for alcoholism, shock for tactile behaviors).

The following is a review of some widely researched applications of aversion therapy.

Obesity

Most aversion therapy for obesity has employed covert sensitization, a technique developed by Cautela.[4] Subjects are directed to develop a vivid mental image of the events and sensations leading up to and surrounding the unwanted behavior. They are generally assisted in this effort by the therapist, who describes the scenario in detail, based on information gleaned from the subject. An aversive image (generally designed to elicit disgust or fright) is then introduced into the mental scenario. The individual thereby learns to associate the unwanted behavior (in this case, eating high-energy foods) with unpleasant sensations (in this case, probably nausea). In later, real-life situations, the unwanted behavior is blocked by the negative physiologic response.

Early, uncontrolled case studies[4,6] reported weight loss in patients using covert sensitization techniques. Two later empirical studies[7,8] supported the efficacy of covert sensitization over attention only and untreated controls. However, one of these studies[7] suggested that positive reinforcement techniques were equally effective for weight loss. A study by Ashem and colleagues[9] suggested that covert sensitization was as effective as use of an aversive olfactory stimulus (hydrogen sulfide), but weight loss was not maintained at follow-up.

Later controlled studies[10-13] failed to replicate the earlier successes in that nonaversive techniques were equally or more effective, no effect was found, or weight loss was not sustained. Later authors attributed the earlier successes to placebo and expectancy effects.

From the Council on Scientific Affairs, American Medical Association, Chicago.

This report was submitted to the AMA House of Delegates at the June 1987 Annual Meeting as an informational report.

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all of the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the views of the scientific literature as of February 1987.

Reprint requests to Council on Scientific Affairs, American Medical Association, 535 N Dearborn St, Chicago, IL 60610 (William R. Hendee, PhD).

In a review of the covert sensitization literature, Little and Curran[14] conclude that research does not support the use of this aversive technique in treating obesity.

Tobacco Smoking

A number of aversive strategies have been employed to aid people in quitting tobacco smoking. Sachs[15] notes that two early studies[16,17] suggested promising results with the use of mild electric shock as an aversive stimulus, but that application of electric shock for this purpose has faded from clinical use and research investigation.

Research into the use of covert sensitization for smoking suggests that this technique is not effective.[13] Controlled studies have either failed to show a differential effect of treatment[18-20] or relapse rates were high.[21-23] Little and Curran[14] conclude that there is little evidence to support the use of covert sensitization to treat smoking.

The most common form of aversion therapy for smoking relies on the unpleasant properties of cigarette smoke (heat, pulmonary irritation). Developed at the University of Oregon, Eugene, in 1972,[24] the technique is commonly referred to as rapid smoking therapy. The technique involves inhaling cigarette smoke every six seconds until the individual no longer wants to take another puff. Satiation generally takes about 15 minutes.[14] The initial studies reported 64% abstinence rates at six months. Although initial concern was raised about the health implications of this technique for patients with cardiac and pulmonary disease,[25] a study by Hall and others[26] reported a success rate of 50% at two-year follow-up in cardiac and pulmonary patients without negative health effects. The authors state that rapid smoking therapy is "safe and effective" in patients with mild to moderate cardiopulmonary disease or histories of uncomplicated heart attacks.

A hospital-based smoking cessation program combines shock, "quick puffing," and educational/supportive techniques. This program reports 55.3% abstinence rates at one-year follow-up (J.W. Smith, M.D., unpublished data, October 1986).

The literature includes a reference to a variation on rapid smoking, the "Smoke-Them-Out-of-Pleasure" technique.[27] In this method, patients are directed to engage in rapid smoking until they lose consciousness. The originator, Ganesan, observes that patients gradually develop hypersensitivity until one cigarette is sufficient to induce loss of consciousness. This technique has not been medically or empirically evaluated as yet.

Alcoholism and Drug Abuse

Fairly extensive work has been done in the use of aversion treatment for alcoholism. The literature on aversion treatment of drug abuse is limited.

Electric shock was first used to treat alcohol abuse in 1925,[28] ten years before the first use of chemical aversion therapy.[29] In this work, Kantarovich[28] reported 70% abstinence at follow-up of up to 20 months. However, use of electric shock was then discontinued. This treatment was reintroduced in the 1960s, following statements by Eysenck[30] and Rachman,[31] who observed that nausea-inducing drugs are difficult to administer reliably, are unpleasant for patients and therapists, and generate hostility on the part of the patients. A series of studies by Blake[32,33] reported 50% abstinence at 12 months when electric shock and relaxation training were used together. Later studies (one controlled),[34-36] however, have generally demonstrated weak immediate results and poor follow-up data. Only one study[37] reported equally good results with chemical and electric shock therapy. Comprehensive reviews[38,39] conclude that the evidence supporting the efficacy of electrically based treatment of alcoholism is weak.

Chemical treatment of alcohol abuse has been extensively researched. Although disulfiram (Antabuse), which blocks the oxidation of acetaldehyde and causes nausea when alcohol is consumed, is commonly thought of as an aversion therapy, its use is founded on the principle of avoidance; thus, it is not technically an aversive technique. If the individual taking disulfiram never drinks alcohol, no unpleasant experience is ever precipitated.

Most aversive programs are founded on the early work of Voegtlin and Lemere[29,40] at Schick Shadel Hospital, Seattle. This procedure has since been utilized at other hospitals, generally in the context of a multimodality program. Patients are placed in a room designed to look and feel like a bar. They are given emetine, a nausea-inducing drug, with warm water to encourage vomiting. As nausea begins, the patient is given five to six drinks. Once vomiting subsides, the patient is sent to bed and is given warm beer and more emetine. Treatment is repeated for approximately ten days with periodic "rest days." Once nausea is observed to persist for three hours, the patient is discharged. Two "booster sessions" are often given during the two-year follow-up period. The initial studies reported successful abstinence rates of 60% at one year and about 40% at five years. Studies conducted later[41,42] in a program in Oregon reported similar success rates (51% at two years). In the later study, Wiens and Menustik[42] state that older men had higher abstinence rates than younger men and that married men responded more favorably than single ones. These effects were not observed in women. Evaluation of a program in California[43,44] yielded one-year follow-up abstinence rates ranging from 35% to 53%.

These results are encouraging, and Cannon and Baker[45] have demonstrated that physiologic evidence of conditioning is present in emetic therapy but not electrical therapy. However, several reviewers[39,46,47] have cautioned that the treatment programs involve many nonaversive components, that the reports have no control groups, and that the types of patients volunteering for programs of this nature are highly motivated.

Raymond,[48] in studies using apomorphine hydrochloride, has suggested that nausea alone is sufficient for aversive conditioning. Apomorphine has been most widely used in European studies. Lemere and Voegtlin rejected it because of its sedative properties, which could interfere with conditioning. Boland et al,[49] in a controlled study, have used lithium carbonate with some success; however, medical reactions produced by this drug have been a problem.

Emetine is approved for use only in the treatment of amebic disease and other parasitic infections. However, the Food and Drug Administration has ruled that no action to warn against its use in alcohol aversion therapy is considered to be necessary. Emetine has been shown to affect basic cellular processes in the concentrations required for treating amebic dysentery. At doses used in alcohol treatment, protein synthesis in myocardial cells and disruptions in skeletal muscle cells have been demonstrated in animals. Consequently, monitoring by a physician is strongly indicated.

Some work has been done using injections of succinylcholine to induce brief paralysis of the respiratory muscles (apneic conditioning). Early studies[50] reported fairly good short-term abstinence rates. However, results of subsequent studies[51,52] were disappointing and raised ethical questions about the practice.

Meta-analysis of the effect sizes of 26 chemical aversion studies[53] yielded moderate support for the efficacy of this approach, with more consistent findings for emetics than for respiratory paralysis.

Finally, a small number of uncontrolled studies have explored the use of covert sensitization in the treatment of alcoholism. There is very little empirical support for this application.[14]

Childress et al[54] and McLellan and Childress[55] reviewed the use of these techniques in the abuse of substances other than alcohol. Studies of chemical and electrical techniques have tended to be unrelated case reports. None has demonstrated physiologic conditioning, and the results, although modestly positive, have often been equivocal. Studies of covert sensitization have been equally contradictory and difficult to interpret. In each case, the authors state that no conclusions can be drawn until more comprehensive, controlled studies have been made.

A program employing combined use of electric shock and rapid smoking for the cessation of marijuana abuse[56] reports 84% abstinence at one-year follow-up. Controlled evaluation of this program has not yet been done.

Homosexuality

Under the guidelines of the third edition of the *Diagnostic and Statistical Manual of the Psychiatric Disorders* for mental health professionals, treatment for homosexuality is appropriate only when the patient is uncomfortable with his or her sexual orientation.

Because of the poor success rates of verbal therapies,[57] aversive techniques have been studied as a means of shifting sexual orientation away from homosexuality to heterosexuality. As early as 1935, Max[58] reported a case study in which a homosexual man was required to fantasize in conjunction with electric shock. He reports that after four months, treatment was successful "95% of the way."

Most behavioral therapy for homosexuality combines aversive techniques with positive techniques designed to increase the attractiveness of heterosexual stimuli. Freund[59] used a dual approach in which he first administered an emetic mixture (caffeine and apomorphine) and then showed patients slides of dressed and undressed men when nausea ensued. In the second phase of treatment, the patients were shown films of nude and seminude women seven hours after being given testosterone. Follow-up data on the 67 men over a five-year period revealed poor efficacy for those who were referred by the court and lackluster results for voluntary patients. At five years, only six of 47 voluntary patients could claim absence of homosexual behavior. Of these, only three found women other than their wives sexually attractive. James[60] repeated the combined use of apomorphine and testosterone in a case study with good results, but follow-up has been only to five months.

Thorpe, Schmidt, and others have reported on a series of studies on homosexuality. In 1963,[61] after positive conditioning proved unsuccessful, a patient was made to stand in a 9-ft-square room in which the floor was covered with an electrical grid. He was shown slides of a nude man while current was passed through the floor to his bare feet. The authors report successful adaptation from homosexuality to bisexuality after 4,000 trials. Attempts to replicate this procedure failed[62] when a second patient discontinued treatment after two days.

In a third study on three homosexual men,[63] the same authors switched from visual stimuli to key "homosexual and heterosexual words." The words appeared in a window, and the patients were directed to read each one aloud. Homosexual words were paired with electric shock; heterosexual words were not. Failure to read the words elicited even stronger shock. Although the authors report good success, Feldman[64] challenges their work on the basis of methodology, subject selection, and lack of adequate follow-up.

Finally, a complicated design used an avoidance theory paradigm: slides of men were randomly alternated with slides of women, in conjunction with avoidable and unavoidable shock. Feldman and McCulloch[65] reported escape from homosexual fantasy in ten of 16 patients treated.

With the advent of imagining techniques, investigation turned to evaluating covert sensitization in the treatment of homosexuality. Most of these studies also included systematic desensitization to facilitate attraction to women. In their review, Little and Curran[14] express cautious optimism about the usefulness of covert sensitization (imagined stimuli, imagined aversive experience) in treating sexual problems, but stress the need for more controlled studies with longer follow-up.

Maletzky and George[66] advocate "assisted covert sensitization," a technique by which the imagined aversive scene is bolstered by the application of valeric acid, a noxious-smelling substance. They report excellent results, both immediately and at follow-up. However, further research is needed to clarify the usefulness of this technique.

A final note of caution in evaluating all this research comes from the work of Barlow et al,[67] who found imperfect agreement between self-reports of sexual arousal and penile circumference measurements. This discrepancy underlines the importance of objective outcome measurements and questions earlier reported results.

Sexual Problems

Investigations of unwanted sexual behaviors (eg, fetishes, sadism, pedophilia, exhibitionism, transvestism) have paralleled the ones described above for homosexuality. Most studies have employed apomorphine-induced nausea as the aversive experience. In addition, early studies[68,69] also included amphetamine-induced sleep deprivation. Between sessions, patients were often provided with tapes designed to produce "intensive moral suggestion."[64] In one early study[70] using emetine, treatment was discontinued after the patient developed toxic myocarditis from the aversive agent. Very few controlled, multiple-patient studies have been conducted.

A few studies have used electric shock as the noxious experience.[71,72] In these uncontrolled studies, the outcome was approximately equivalent to that observed in the nausea studies.[73] Rachman[31] and Barker[71] preferred electric shock, as it is less unpleasant for patients and staff, is more easily and fully controlled, and has fewer potentially dangerous side effects.

Studies investigating the use of covert sensitization[73-75] and assisted covert sensitization[76] have yielded results comparable to those using overt aversion. In their review, Little and Curran[14] conclude that sexual deviance is the one area in which covert sensitization appears to have confirmed usefulness. However, as with overt techniques, the literature on covert sensitization contains predominantly uncontrolled, multifactorial treatment approaches.

Thumb Sucking and Other Oral Habits

A common, more benign application of aversive techniques is to combat thumb sucking and related oral habits. A parent-administered program[77] is generally used in which the sucked fingers or objects are painted with a nontoxic, bitter fluid. The child learns to associate sucking on the object with an unpleasant taste. Although intially confused by this experience, the child quickly learns to avoid the bad taste by discontinuing the sucking or chewing behavior. In a controlled, multiple baseline study of seven children,[78] investigators found that this treatment was effective in eliminating sucking in only two days or less for all children. Application of the fluid was continued for ten days. Continued abstinence was observed in all seven children at three- and six-month follow-up. The investigators note that treatment should not be instituted for children under four years of age unless orthodontic problems are present, or for children who have emotional concerns.

Dangerous and Unwanted Behaviors in Mentally Retarded Individuals

Of the various applications of aversion therapy, this one has been the most controversial, particularly for mentally retarded children and adolescents. Survey results suggest that parents of non-disordered children find aversive techniques objectionable.[79] A survey of residential institutions[80] found that 86% believed that aversive conditioning is legitimate and acceptable when used to alleviate certain behaviors. Tanner[81] argues in favor of its use, stating that it is no more dangerous than other forms of treatment and there is no evidence to suggest that it is emotionally damaging or dehumanizing. In a review article, Repp and Brulle[82] discuss the range of aversive treatments employed in retarded and autistic populations, as well as methodological and ethical considerations.

One focus of aversive techniques with the mentally retarded is the reduction or elimination of stereotypic, self-stimulatory behaviors. In a comprehensive review of more than 60 studies, LaGrow and Repp[83] summarize the types of behaviors typically observed and the results of various positive and negative intervention strategies. They conclude that aversive procedures as a class were more effective than positive procedures, manipulation of the environment, and sensory extinction. Of the aversive techniques, electric shock yielded the most consistently positive results. However, they raise questions about the need for wholesale elimination of these behaviors and procedural alternatives.

A procedure not reviewed by LaGrow and Repp is the use of water mist in the face. This technique has recently appeared in the literature and has shown initial promise.[84] Additional research is needed to determine its relative value.

LaGrow and Repp[83] discuss the relative merits of eliminating all stereotypic behaviors vs teaching individuals to manifest such behaviors in a more discriminating fashion. They state that it is also important to investigate the social consequences of stereotypy. They argue that evidence is needed to demonstrate that reducing stereotypic behaviors improves relationships with teachers and/or the public at large to warrant continued intervention.

A second area in which aversive techniques are applied to mentally handicapped individuals is in the elimination of aggression. Repp and Brulle[82] review the criteria for selection of an aversive technique: clear, objective data that (1) intervention is needed, (2) behavioral change is in the interest of the state, and (3) nonaversive techniques have failed. In a review of representative studies, they conclude that aversive techniques can control aggression when these criteria have been met.

Perhaps the best accepted use of aversive techniques in this population is for the reduction of self-injurious behavior. A survey conducted by Griffin et al[85] found that 13.6% of the 10,000 retarded residential patients in Texas engaged in at least one form of self-mutilation. These individuals were distributed across sex, race, and age in proportions equivalent to the total population. Of these individuals, 6.8% were enrolled in a formalized aversive treatment program of some kind. In a related study,[86] the same group found that aversive procedures were successful in controlling 25% of patients displaying severely self-injurious behavior and 31% of those who were moderately affected.

Schroeder et al[87] note that the most common forms of aversive procedures used to decrease self-mutiliation were concentrated lemon juice in the mouth, tickling, loud noise, noxious odors, restraint, and electric shock. Although the results are rapid and dramatic, poor generalization to other settings is shown. In addition, the behavior tends to resume after treatment is tapered off.

The issue of aversion therapy to reduce self-injury has reached national attention lately following the death of a 22-year-old student during an aversive intervention at a residential school in Rhode Island. This incident has created widespread interest in the appropriateness of and indications for such techniques (*Newsweek,* Dec 1, 1986, p 82).[3] A national task force convened in 1982[88] concluded that environmental evaluation and manipulation is the appropriate first approach. When behavior is dangerous and has not improved with less intrusive procedures, the task force concluded that increasingly aversive techniques, up to electric shock for the most severe, are appropriate.

Summary

Of all the work done in the area of aversion therapies, the most positive results have been in the areas of rapid smoking for smoking cessation, emetic therapy for alcoholism, electric shock for self-injurious behavior in mentally retarded individuals, and covert sensitization for sexual problems. In all cases, however, the literature of the field is founded on single or group case studies. Controlled studies in some areas have pointed to the equal efficacy of nonaversive techniques and to the strength of placebo and expectancy effects. As many researchers in the field have pointed out, carefully designed and controlled studies are needed. It is difficult to execute such studies outside of the laboratory setting; however, such research is necessary before definitive conclusions can be drawn.

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Treatment of Acute Drug Abuse Reactions

THE MEDICAL LETTER

Emergency management of intoxication, overdose, and withdrawal syndromes caused by abused drugs is a continuing medical problem. The signs and symptoms of drug abuse reactions are summarized in Table 1. Laboratory tests on urine, blood, or gastric aspirate may be helpful, particularly when more than one drug is involved. Alcohol toxicity and abuse are not included here, but alcohol is frequently used in combination with other drugs and can modify signs and symptoms of abuse; obtaining blood alcohol as well as drug levels is frequently advisable. Treatment of alcohol withdrawal was reviewed in a previous issue of *The Medical Letter* (vol 28, p 75, 1986).

COCAINE AND OTHER CNS STIMULANTS—Cocaine use can cause myocardial infarction, arrhythmias, myocarditis, and other myocardial damage (Isner JM et al, *N Engl J Med,* 1986;315:1438; Wiener RS et al, *Am J Med,* 1986;81:699; Tazelaar HD et al, *Hum Pathol,* 1987;18:195). Smoking "crack" (alkaloidal or free base cocaine) produces effects similar to those of IV injection (*Medical Letter,* 1986;28:69). Death has occurred after smoking "crack," ingestion, sniffing, "body-packing," or intravenous use of cocaine. Bronchiolitis obliterans organizing pneumonia after smoking free base cocaine has been reported (Patel RC et al, *Ann Intern Med,* Aug 1987;107:186).

Paranoia due to cocaine can be treated with haloperidol (*Haldol;* and others) and seizures controlled with diazepam (*Valium;* and others). The acute effects of amphetamine abuse can be treated with a benzodiazepine or haloperidol. Nitroprusside (*Nipride;* and others), phentolamine (*Regitine*), or labetalol (*Trandate; Normodyne*) can be used to decrease blood pressure and rapid cooling to treat hyperthermia.

Gradual detoxification after withdrawal from CNS stimulants is not necessary. Withdrawal from cocaine or amphetamines can cause irritability and sometimes severe depression. Amantadine (*Symmetrel;* and others) and bromocriptine (*Parlodel*) were both recently reported effective for relieving dysphoria and craving in cocaine addicts in controlled trials (Giannini AJ et al, *J Clin Pharmacol,* 1987;27:267; Tennant FS Jr and Sagherian AA, *Arch Intern Med,* 1987;147:109).

OPIOIDS—Illegal opioids may be adulterated with quinine, lactose, mannitol, or other drugs, or contaminated with bacteria, viruses, fungi, or particulate matter. Intravenous injection of pentazocine (*Talwin*) plus the antihistamine tripelennamine (*PBZ;* and others) has been used as a heroin substitute; addiction of the opioid antagonist naloxone (*Narcan*) to pentazocine had decreased such use, but abuse of the new formulation has also been reported (Reed DA and Schnoll SH, *JAMA,* 1986;256:2562). MPTP, a contaminant found in illicit preparations of a meperidine analog, has caused permanent parkinsonism and death (Burns RS et al, *N Engl J Med,* 1985;312:1418; Ballard PA et al, *Neurology,* 1985;35:949).

Naloxone will reverse apnea and coma caused by acute intoxication with heroin, morphine, codeine, meperidine (*Demerol;* and others), propoxyphene (*Darvon;* and others), methadone (*Dolophine;* and others), and possibly pentazocine, but will not relieve pulmonary edema. An initial intravenous or intramuscular dose of 0.4 to 2 mg of naloxone, which has a very short half-life, can be repeated at two- to three-minute intervals or followed by an intravenous infusion delivering two thirds of the total initial dose each hour. Naloxone is a safe drug, but excessive doses can precipitate signs and symptoms of withdrawal in opiate-dependent patients. Overdosage with methadone, which has a 24-hour half-life, may require repeated doses or an infusion of naloxone over 72 hours, carefully titrated to avoid withdrawal symptoms.

Withdrawal from opioids is usually life-threatening only in newborns. Most opioid-dependent patients can be made relatively comfortable with 10 mg of methadone orally three or four times during the first 24 hours, followed by lower doses. Clonidine (*Catapres;* and others), an antihypertensive drug, has been used as a detoxifying agent, but it can cause hypotension and may not be completely effective (Kleber HD et al, *Arch Gen Psychiatry,* 1985; 42:391; Jasinski DR et al, *Arch Gen Psychiatry,* 1985; 42:1063).

OTHER CNS DEPRESSANTS—Benzodiazepines, such as diazepam, are rarely lethal in overdosage, but can

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or other have dangerous additive effects when used with alcohol depressants. Oral glutethimide (*Doriden;* and others) plus codeine has been widely used as a heroin substitute. The manufacture of methaqualone (*Quaalude;* and others) has been stopped in the U.S.A., but it is still available through Mexico and Canada. Overdosage with barbiturates can cause hypoventilation, apnea, and death.

For acute intoxication with a CNS depressant, an airway must be maintained and shock treated with fluids. After intubation, gastric lavage followed by instillation of activated charcoal may remove some of the drug. Rarely, charcoal hemoperfusion is indicated for treatment of intractable shock associated with barbiturate overdose.

Abrupt withdrawal of large doses of barbiturates can be life-threatening; the dosage should be tapered, or phenobarbital or pentobarbital substituted and dosage gradually decreased. Prolonged withdrawal reactions may occur with phenobarbital or glutethimide. Severe abstinence symptoms, including psychosis and convulsions, can occur after prolonged or excessive use of benzodiazepines. A high rate of severe withdrawal reactions and recurrence of symptoms, especially in patients with panic attacks, has been reported following treatment with the benzodiazepine alprazolam (*Xanax*), and very gradual tapering of dosage is recommended (Fyer AJ et al, *Am J Psychiatry,* 1987;144:303). Carbamazepine (*Tegretol;* and others) has been reported effective for treatment of alprazolam withdrawal symptoms in a few patients (Klein E et al, *Am J Psychiatry,* 1986;143:235). With long-acting benzodiazepines, such as diazepam, withdrawal reactions are delayed for days or weeks and then may be confused with return of anxiety.

HALLUCINOGENS – Hallucinogens such as LSD and mescaline (one of the active ingredients in peyote) induce a state of hypersuggestibility that can be exploited by reassuring the patient in a quiet setting. Patients who have used phencyclidine (PCP), however, may be overstimulated by attempts at reassurance and should instead be observed in a quiet area. When agitation requires drug treatment, haloperidol or diazepam is preferred; seizures can be treated with intravenous diazepam. Hyperthermia can also occur and should be treated by rapid cooling.

No true withdrawal syndrome occurs following use of hallucinogens, but one patient who used PCP developed panic attacks that continued after stopping the drug (Price WA and Giannini AJ, *Am J Psychiatry,* May 1987;144:686). “Flashbacks” or brief recurrences of the hallucinogenic state usually require only a benzodiazepine plus reassurance. Prolonged anxiety and psychotic reactions can occur and may require treatment with antipsychotic drugs.

CANNABIS – No specific treatment is recommended for acute reactions to cannabis. For accidental ingestion in children, emetics and gastric lavage may be helpful. Acute withdrawal reactions from marijuana are rare, but anxiety, dysphoria, insomnia, anorexia, tremulousness, nystagmus, diaphoresis, depression, and hyperreflexia can occur (Mendelson JH et al, *Am J Psychiatry,* 1984; 141:1289).

ANTICHOLINERGICS – Physostigmine (*Antilirium*), which has serious adverse effects, should be reserved for treatment of signs of life-threatening anticholinergic overdosage (uncontrollable convulsions, coma with respiratory depression, or severe hypertension).

VOLATILE INHALANTS – Nitrous oxide is sometimes sniffed for transient euphoria; reported reactions have included inability to concentrate, weakness, ataxia, impotence, and peripheral neuropathy. Inhalation of amyl, butyl, or isobutyl nitrite has caused dizziness, headache, tachycardia, syncope, hypotension, acute psychosis, increased intraocular pressure, transient hemiparesis, methemoglobinemia, coma and, rarely, sudden death.

Inhalation of toluene along with volatile hydrocarbons and methyl ethyl ketone, found in paint and glue, can cause euphoria, hallucinations, hypokalemia and other metabolic abnormalities, renal tubular acidosis, coma, ataxia, headaches, convulsions, encephalopathy, somnolence, muscle weakness, severe nightmares, abdominal pain, hematemesis, cerebellar dysfunction, and severe peripheral neuropathy. Sudden death in patients inhaling these substances may follow arrhythmias, cardiomyopathy, or electrolyte abnormalities (Zee-Cheng C-S et al, *Ann Intern Med,* 1985;103:482; Wiseman MN and Banim S, Cunningham SR et al, *Br Med J,* March 21, 1987;294:739).

Inhaling the hydrocarbon solvent 1, 2-dichloropropane (used as a spot remover) can cause acute renal failure, hemolytic anemia, and disseminated intravascular coagulation. Ventricular fibrillation and death have occurred after sniffing bromochlorodifluoromethane (BCF), a fire-extinguishing halogenated hydrocarbon. Inhaling gasoline fumes can cause dizziness, coma, hallucinations, ataxia, tremor, organic lead encephalopathy, peripheral neuropathy, and sometimes acute myopathy or myoglobinuria (Fortenberry JD, *Am J Med,* 1985;79:740). Coma, cardiac arrhythmias, and death have followed sniffing of 1, 1, 1-trichloroethane, perchloroethylene, and trichloroethylene, found in “*Scotch-gard,*” glue, and typewriter correction fluids (*Liquid Paper*; and others) (King GS et al, *JAMA,* 1985;253:1604). Inhalation of the hydrocarbon solvent methylene chloride may cause carbon monoxide poisoning as a result of its metabolism (Sturmann K et al, *Ann Emerg Med,* 1985;14:903). Tolerance may develop to the central-nervous-system effects of some inhalants, but withdrawal syndromes appear to be rare.

Table 1
SYMPTOMS AND SIGNS OF DRUG ABUSE*

Drug	*Acute Intoxication and Overdose*	*Withdrawal Syndrome*
CNS Stimulants Cocaine; amphetamine; dextroamphetamine, methylphenidate; phenmetrazine; phenylpropanolamine; STP;[1] MDMA,[2] Bromo-DMA,[3] diethylpropion; most amphetamine-like anti-obesity drugs	**Vital Signs**: temperature elevated; heart rate increased; respirations shallow; BP elevated **Mental Status**: sensorium hyperacute or confused; paranoid ideation; hallucinations; delirium; impulsivity; agitation; hyperactivity; sterotypy **Physical Exam**: pupils dilated and reactive; tendon reflexes hyperactive; cardiac arrhythmias; dry mouth; sweating; tremors; convulsions; coma; stroke	Muscular aches; abdominal pain; chills, tremors; voracious hunger; anxiety; prolonged sleep; lack of energy; profound depression, sometimes suicidal; exhaustion
Opioids Heroin; morphine; codeine; meperidine; methadone; hydromorphone; opium; pentazocine; propoxyphene; fentanyl; sufentanil	**Vital Signs**: temperature decreased; respiration depressed; BP decreased, sometimes shock **Mental Status**: euphoria; stupor **Physical Exam**: pupils constricted (may be dilated with meperidine or extreme hypoxia); reflexes diminished to absent; pulmonary edema; constipation; convulsions with propoxyphene or meperidine; cardiac arrhythmias with propoxyphene; coma	**Pupils** dilated; **pulse** rapid; gooseflesh; lacrimation; abdominal cramps; muscle jerks; "flu" syndrome; vomiting; diarrhea; tremulousness; yawning; anxiety
CNS Depressants Barbiturates; benzodiazepines; glutethimide; meprobamate; methaqualone; ethchlorvynol; chloral hydrate; methyprylon; paraldehyde	**Vital Signs**: respiration depressed; BP decreased, sometimes shock **Mental Status**: drowsiness or coma; confusion; delirium **Physical Exam**: pupils dilated with gluthethimide or in severe poisoning; tendon reflexes depressed; ataxia; slurred speech; nystagmus; convulsions or hyper-irritability with methaqualone; signs of anticholinergic poisoning with glutethimide; cardiac arrhythmias with chloral hydrate	Tremulousness; insomnia; sweating; fever; clonic blink reflex; anxiety; cardiovascular collapse; agitation; delirium; hallucinations; disorientation; convulsions; shock
Hallucinogens LSD;[4] psilocybin; mescaline; PCP[5]	**Vital Signs**: temperature elevated; heart rate increased; BP elevated **Mental Status**: euphoria; anxiety or panic; paranoia; sensorium often clear; affect inappropriate; illusions; time and visual distortions; visual hallucinations; depersonalization; with PCP hypertensive encephalopathy **Physical Exam**: pupils dilated (normal or small with PCP); tendon reflexes hyperactive; with PCP: cyclic coma or extreme hyperactivity, drooling, blank stare, mutism, amnesia, analgesia, nystagmus (sometimes vertical), gait ataxia, muscle rigidity, impulsive or violent behavior, violent, scatological, pressured speech	None
Cannabis Group Marijuana; hashish; THC,[6] hash oil; sinsemilla	**Vital Signs**: heart rate increased; BP decreased on standing **Mental Status**: anorexia, then increased appetite; euphoria; anxiety; sensorium often clear; dreamy, fantasy state; time-space distortions; hallucinations may be rare **Physical Exam**: pupils unchanged; conjunctiva injected; tachycardia, ataxia, and pallor in children	Nonspecific symptoms including anorexia, nausea, insomnia, restlessness, irritability, anxiety, depression
Anticholinergics Atropine; belladonna; henbane; scopolamine; trihexyphenidyl; benztropine mesylate; procyclidine; propantheline bromide; jimson weed seed	**Vital Signs**: temperature elevated; heart rate increased; possibly decreased BP **Mental Status**: drowsiness or coma; sensorium clouded; amnesia; disorientation; visual hallucinations; body image alterations; confusion; with propantheline restlessness, excitement **Physical Exam**: pupils dilated and fixed; decreased bowel sounds; flushed, dry skin and mucous membranes; violent behavior; convulsions; with propantheline circulatory failure, respiratory failure, paralysis, coma	Gastrointestinal and musculoskeletal symptoms

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* Mixed intoxications produce complex combinations of signs and symptoms

1. STP (2, 5-dimethoxy-4-methylamphetamine)
2. MDMA (3, 4 methylenedioxymethamphetamine)
3. Bromo-DMA (4-Bromo-2, 5-dimethoxyamphetamine)
4. LSD (d-lysergic acid diethylamide)
5. PCP (phencyclidine)
6. THC (delta-9-tetrahydrocannabinol)

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View from the Hill

JAMES E. BRYAN

When the 100th Congress of the United States convenes for its second session after the year-end holidays, the lawmakers will confront the urgent, contentious and confused issue of catastrophic medical care protection. Congress is challenged to deal with two discrete catastrophic contingencies: (1) to limit the Medicare patient's liability for the costs of long-term hospital confinement in an acute care facility, and (2) to help finance long-term care and maintenance in a nursing home without requiring the resident and family members to impoverish themselves in order to qualify for Medicaid assistance. Beyond these two complex problems, one senses a deepening conviction among physicians, lay citizens and an increasing number of legislators, that the American health care system is spinning out of control, and that the time has come for the medical community, Congress and the public to review and redefine its structure and function.

I previously recounted the beneficial, though largely fortuitous, progression of American medicine following World War II. It began with the Hill-Burton Hospital Reconstruction Act of 1946, and was followed by a multibillion-dollar investment in basic and bioclinical research and technologic development through the National Institutes of Health. Thereafter, still more billions of social investment expanded health care manpower to meet the needs of a growing population. Then, in the mid-1960s, Congress undertook Medicare and Medicaid in hopes of assuring access to medical care for the elderly, unemployed, disabled and disadvantaged, and for many more medically indigent Americans, for whom even a short-term illness represents financial catastrophe. The achievements of these two major "incremental" programs, however, soon brought into focus two enormous lacunas—two spacious holes in the "safety net" that Congress must now face.

First and most obvious is the revelation that one in every seven Americans (37 million already, and more each day) are unprotected from the costs of illness or disability. Either they are temporarily or chronically jobless or unemployable, their employer carries no health care insurance for employees, or they are otherwise ineligible for governmental programs and unable to purchase private health coverage. They comprise the vast company of the "uncompensated."

The second major deficiency is the double-barreled problem of the financial catastrophe inflicted on appreciable numbers of citizens and their families whose medical care coverage fails to protect them against certain real contingencies. One of these comprises the need to finance or subsidize the costs of long-term confinement and care of aged, ill patients in acute hospitals who have exhausted presently available Medicare benefits. The objective here is to limit the Medicare patient's personal liability. The second type of financial catastrophe, which affects many more elderly people and their familes than that described above, is the cost of an indefinite confinement in a nursing home—particularly onerous if the aged person requires more than custodial care. Unless the prospective nursing-home resident or the family is reasonably affluent, they will be obliged under current regulations to exhaust their available resources to qualify for Medicaid subsidy.

Congress has recently and often been importuned to recognize the many complications in fulfilling our national commitment to provide every American access to modern health care services.

For example, in a persuasive OP-Ed piece in *The Washington Post* on September 8, 1987, Stuart Eisenstat, who was President Carter's chief domestic adviser, reminds us that, however urgent and worthy it is to enact "marginal improvements" in catastrophic care for the elderly, "a longer-term pay back for the country would be achieved" by combining that effort with "expanded health care benefits for low-income children and pregnant women." Mr. Eisenstat argues that passage of a popular catastrophic measure "primarily benefiting the middle class" might dissipate political interest in closing health care gaps for less politically powerful Americans, such as the millions of poor children and their parents who are among the estimated 15 percent or more Americans comprising the uncompensated. We scarcely need Mr. Eisenstat's reminder that a dollar spent on preventive medical service for poor children and pregnant women is a more

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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productive investment, socially, than a dollar spent for catastrophic coverage. (For every dollar invested in prenatal care, the National Academy of Sciences estimates we save $3 in the first year of life.)

A catastrophic plan would also aggravate the imbalance between Medicaid and Medicare. Recent budget cuts have penalized Medicaid far more seriously than they have affected the non-income-tested Medicare program. These cuts have affected aid to welfare families, particularly Aid to Families with Dependent Children.

Yet another complication is that pending legislation for catastrophic health care coverage would send the bills for the package to the elderly "beneficiaries." The American Association of Retired Persons (AARP), the 26 million-member association of the elderly and retired, protests that the legislation would be unfair. "Older Americans should pay part of the bill," they acknowledge, "but not *all* of it." The AARP spokesman observed, "Over the years, costs have been shared by a larger segment of the population, in line with the social insurance concept basic to Medicare."

Opposition to the entire concept of catastrophic insurance stems chiefly from the private insurance industry, including Blue Cross/Blue Shield. These groups fear that any substantial catastrophic health insurance plan will shrink—if not squelch—the market for the profitable supplemental or medigap policies carried by a substantial portion of Medicare beneficiaries.

The exhaustive debate over these problems is rendered intolerably frustrating by partisan maneuvering, by the complexity of the socioeconomic factors and potential costs involved, and by the ideologic obstinacies of both Congress and the Administration—effectively stalling solutions that require both a willingness to compromise and a caring spirit.

In an effort to resolve the confusion, Otis Bowen, M.D., secretary for Health and Human Services, has identified three groups as principal beneficiaries of the Administration's catastrophic insurance initiative: (1) the elderly faced with high expenses for acute care; (2) the elderly confronting high chronic care costs, and (3) workers and others with high health care expenses. Dr. Bowen estimates that the first group comprises 1.4 million Medicare beneficiaries (out of a total roster of 28 million) whose "catastrophe" he defined as out-of-pocket expenses for Medicare-covered costs exceeding $2,000 in 1986. But the legislation now pending in both the House and Senate bears little resemblance to Dr. Bowen's original proposal.

In a concluding note, let me recall the earlier suggestion that America's health care system appears to be in a state of undirected, uncoordinated, almost chaotic change. I venture to think that a head-to-toe examination might at least retard the present trend to anomie and entropy, and perhaps resolve what appears to be a crisis of identity.

High tech

Charon was inclined to refuse Aeneas and his guide when they came down to the boat. He bade them halt and told them he did not ferry the living, only the dead.

Edith Hamilton

Bellows flood oxygen
past cilia yielding
as rockweed tilts
to the current's flow.
Paced by metered maestro,
the heart plays a somber fugue
as lungs drowned in brine
bubble and sigh,
contrapuntal
to each fourth beat.

Fretful Charon,
delayed by lines
stronger than those
which moor his boat,
waits for the old woman
tethered to her bed.
Weary, wasted,
she joins him;
he takes up his pole
and pushes off.

Conrad Rosenberg, M.D.

Dr. Rosenberg is Associate Professor of Clinical Medicine at New York University School of Medicine.

— *Society for the Right to Die*, Newsletter, Fall 1987.

Editorial

Fifty Hours for the Poor

Doctors, lawyers, and the clergy belong to the classic learned professions, which are historically distinguished from trades and businesses. Although this distinction has blurred in modern times, one of the characteristics of a true profession remains its special relationship with the poor.

Edmund Pellegrino, director of the Kennedy Institute of Ethics, states that a fundamental difference between a business and a profession is that "at some point in the professional relationship, when a difficult decision is to be made, you can depend on the one who is in a true profession to efface his own self-interest."

The privilege to practice law or medicine has carried with it the obligation to serve the poor without pay. Doctors and lawyers today have tended to become overly concerned with their professional incomes and practice efficiencies, but they must not forget their higher duties. Many members of our professions have always cared for the poor who need legal or medical help. But their efforts are not what they should be, and there is abundant evidence of unmet needs. For example, 35 to 50 million Americans are now believed to be medically uninsured or seriously underinsured; access to health care is widely considered to be in crisis. For 68% of legal problems encountered by poor people, the services of a lawyer are not used, according to the American Bar Foundation.

The philosophical and ethical roots of the medical and legal professions are entwined with the public interest, service to the community, and caring for the poor. These professions maintain those values. In law, the official policy of the American Bar Association, adopted in 1975, states:

> It is a basic professional responsibility of each lawyer engaged in the practice of law to provide public interest legal services without fee or at a substantially reduced fee in the following areas: poverty law, civil rights law, charitable organizations representation and administration of justice. It should always be provided in a manner consistent with the Model Rules of Professional Conduct. The organized bar should assist each lawyer in fulfilling his responsibilities in providing such services as long as there is need, and should assist, foster, and encourage governmental, charitable, and other sources to provide public interest legal services.

In medicine, the American Medical Association's original code of ethics, written in 1846, emphasizes relief of pain and diseases without regard to danger or personal advantage and states that "to individuals in indigent circumstances, professional services should be cheerfully and freely accorded." In 1987, the American Medical Association House of Delegates approved as policy: "That the AMA urge all physicians to share in the care of indigent patients." Principle 3-6b of the Health Policy Agenda for the American People states that, "All health care facilities and health professionals should fulfill their social responsibility for delivering high quality health care to those without the resources to pay."

How many members of the legal and medical profession now deliberately care for the poor in a voluntary and uncompensated way? Many, but not enough. What percentage of their time is spent doing so? Much, but not enough. Accompanying articles in this issue of both the *ABA Journal* and *JAMA* explore these questions in some detail.

Doctors and lawyers in our society have benefited greatly from the abundant opportunities made available to them from the fruits of our plenty. We believe that all doctors and all lawyers, as a matter of ethics and good faith, should contribute a significant percentage of their total professional efforts without expectation of financial remuneration. This percentage will vary depending on time, setting, opportunity, and need, but all should give something. This is the proper behavior of a learned professional. We believe that 50 hours a year—or roughly one week of time—is an appropriate minimum amount.

There is a great tradition behind the giving of this gift. In the church, it is called *stewardship*. In law, it is called *pro bono publico*. In medicine, it is called *charity*. In everyday society, it is called *fairness*.

George D. Lundberg, M.D.
Editor, *JAMA*
Chicago

Laurence Bodine, Esq
Editor and publisher, *ABA Journal, The Lawyer's Magazine*
Chicago

This editorial also appears in the December issue of the *ABA Journal, The Lawyer's Magazine*.

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The President's Page

American Medical Association

As President-Elect and President of your Connecticut State Medical Society, I've enjoyed attending and representing you at the American Medical Association conventions in Chicago, Las Vegas, and, most recently, in Atlanta.

Although many of the state medical societies at these conventions have unified membership, ie, mandatory combined county, state, and national medical association membership, our Connecticut society does not. The reason, I've heard over the years, is that many of you do not want to be forced to belong to the American Medical Association—an organization that many of you feel doesn't do anything for you. You would rather split with the state society than join. Being of the mind that force is abhorrent, I believe it is the right of every member of our profession to resist force. However, I wish that the same resistance were shown to those external forces that are presently pressuring our profession from all sides.

At these conventions, I have watched with awe thousands of delegates, their alternates, and supporting staffs descend on a center to meet the objectives of the American Medical Association. These objectives are the promotion of the science and art of medicine and the betterment of public health. In a matter of days, whether it be three, four, five, or more, these elected representatives, and others, of those recognized medical associations of states, commonwealths, territories, or island possessions, which are federated to form the American Medical Association, meet as the House of Delegates to transact all business of the Association not otherwise specifically provided by the AMA's Bylaws and Constitution and to elect the general officers.

For those who feel that the AMA doesn't represent them, let me indicate how wrong they are. Just look at the composition of the House of Delegates. Its members are physicians who have been active members of the AMA for at least two years and are apportioned from each constituent association in the ratio of one delegate for each one thousand active constituent and active direct members of the AMA within the jurisdiction of that constituent association. In addition, there are medical student members selected by the Medical Student Section of constituent associations. Other member delegates and alternates are selected by the Specialty Societies, Special Sections, the Surgeons General of the United States Army, United States Navy, United States Air Force, and United States Public Health Service, and the Chief Medical Director of the Veterans Administration.

At the Atlanta interim meeting, it was announced that the AMA had enrolled its greatest number of members in its history—just short of three hundred thousand! And the membership is constantly increasing in the ranks of the younger physicians and the students as they perceive the need for a unified voice to represent their diverse interests in the present legislative climate.

Business in the House of Delegates takes the form of resolutions introduced by voting delegates, of reports of the Board of Trustees, and of reports of councils. The resolutions, reports and recommendations, and other new business are first reviewed by caucuses of each state society. In the case of the Connecticut delegation, because of its small size, it caucuses with the other New England delegations as a unified block. These caucuses meet at ungodly hours—anywhere from 6 to 7 AM, including Saturdays and Sundays, depending on the amount of business to be considered.

After being discussed, usually at length, in the caucus, the resolutions are then presented to their appropriate reference committees, as they are at our state House of Delegates meeting. The reference committees, usually composed of five members, run from that of "Amendments to the Constitution and Bylaws" to such additional alphabetical committees as "A" through "H," each with items of business of similar nature. At these hearings, the members of the House may make comments regarding the agenda items.

In Atlanta, there were approximately 150 resolutions on the agenda for the nine reference committees to consider. As at prior conventions, these reference committees begin their hearings in early morning, usually at 9 AM, or earlier if necessary, to meet time constraints. And after due consideration of the business referred to them, such consideration including whomever they wish to appear before them to help formulate their conclusions and recommendations, the committees present their reports to the House of Delegates before final action is taken on the resolutions, reports and, proposals, unless otherwise provided in the AMA Bylaws, or unless otherwise unanimously ordered by the House of Delegates.

In the absence of any provisions to the contrary in the AMA Constitution and Bylaws, all general meetings of the Association and all meetings of the House of Delegates, of the Board of Trustees, of sections, councils, and committees are governed by the parliamentary rules and usages contained in the current edition of "Sturgis, Standard Code of Parliamentary Procedure."

The general officers of the AMA are the president, president-elect, immediate past president, secretary-treasurer, speaker, vice-speaker of the House, and 14 trustees, including a resident physician member and a non-voting medical student member. They are responsible for the property and financial affairs of the AMA and perform duties which are prescribed by laws governing directors of corporations or as may be prescribed in the AMA bylaws.

In addition to members from the constituent organizations, the House has members who belong to the various councils which have a continuing duty to provide information and to submit recommendations to the House, through the Board of Trustees, on matters relating to the areas of responsibility assigned to them under the provisions of the bylaws. Referral to the various councils from the House is made through the Board of Trustees, which may also refer the matter to other councils.

Because of space constraints, the function of each council cannot be explained here, but from their titles one may deduce their responsibilities. There are seven councils at present: on constitution and bylaws, on medical education, on medical service, on ethical and judicial affairs, on long-range plan and development, on legislation, and on scientific affairs.

Further input into the House of Delegates is provided by members from various "special" sections. These consist of sections on resident physicians, medical schools, medical students, hospital medical staff, and young physicians.

In addition, national medical specialty societies which qualify are represented in the House of Delegates. With the addition of the American Rheumatism Association this year, this section now consists of 29 specialty section councils ranging from allergy to urology. They provide for deliberation and study of scientific, educational, and other appropriate interests and concerns of the specialty disciplines and the specialty societies representing these disciplines within the AMA.

As you may see from the above, the American Medical Association *does* represent American medicine. It encompasses the whole spectrum, from medical students to retiring physicians, and everything in between. You are all represented. Your interests are being protected—from fighting for interest-deductibility of student loans to planning for and implementing retirement, with concern for MAACs and RVSs in between. Your patients' interests are being furthered by concern for such items as medical care for the indigent and uninsured, rural health delivery, prevention of drunken driving, fetal alcohol syndrome warning legislation, etc. In this era of physician bashing, the AMA is the lone advocate for physicians—and for their patients—a fact we should never forget. Other organized segments of the medical profession, recognizing their vulnerability to the divide-and-conquer tactics of those forces which are out to control the profession, belong to the House of Delegates. If you're not part of the only unified voice of medicine, think of becoming part of it—join the AMA. And if you are already part of it, think big, think of promoting the unified membership concept for Connecticut, a concept that has been embraced by so many of America's state medical societies.

James P. Orphanos, M.D.
President

Reflections on Medicine

Are the Facilitators in Charge?

ROBERT U. MASSEY, M.D.

"Speaking generally, there is no one so fit to conduct any business, or to determine how or by whom it shall be conducted, as those who are personally interested in it."—John Stuart Mill, *On Liberty*, 1859.

Undergraduate students applying to medical school are understandably unaware of the inner workings of the profession they seek to enter, but most have done their homework. To test this, one of the questions on their application forms is, "What do you see as the most significant issue the medical profession faces in the next forty years?"

In a sample of 33 applications, hardly a significant number, I found six general concerns expressed by the students: corporatization of medicine, or physicians as employees of for-profit organizations; cost of medical care, especially the effect of costs on care for the poor; meeting the needs of an aging population; AIDS; managing medical technology, with its threat of dehumanizing medicine; and the increasing risk of malpractice suits. The last was mentioned by only one student; the first two, costs and medicine-as-a-business, by 22 of the 33. Not surprising for young men and women who have been thinking and reading about medicine for years; students already in medical school would have given similar answers. Running throughout their comments was the expressed hope that they and their fellow physicians might find constructive solutions to these problems. They seemed to think of them as both medical and social issues; no one in this group thought the market, unaided, should be permitted to disentangle the cost-quality-distribution problem, although I have seen that suggestion made occasionally.

These applicants are—most of them—in their fourth year of a rigorous undergraduate curriculum; they have performed well academically, with many at the top of their classes. They have made high scores on a tough admissions examination, and now face at least eight more years of academic and practical work in an intellectually competitive medical school and teaching hospital setting. They will be 30 years old or older before they are on their own. Their education will not prepare them to be managers, but neither will it condition them to be managed. Already they worry that professional administrators and bureaucrats will tell them how to practice medicine, what to do and for whom, mostly for the wrong reasons.

Of course, professional managers protest that practicing medicine is the last thing they are prepared to do; yet increasingly decisions that have more than incidental medical consequences are being made by managers trained to manage for profit and power, not to provide care to all.

In *The American University*, Jacques Barzun, writing about university administrators, urges that those who are to run the place be chosen from the ranks of the professors: "What is not to be thought of, from any point of view, is the professional administrator." He concludes: "In truth the best administrators for a university. . .are likely to be those who are reluctant to serve. Certainly they must not find in administration a chance to enjoy the exercise of power."[1]

If the new medical organizations, with all of their curious and clever financial arrangements, are to retain the essential integrity and *charity* that we, our students, and our patients associate with medicine, the managers must understand that, in Barzun's words, "what they do is mere facilitation."

Unfortunately, physicians and nurses are being subtly conditioned to believe and to accept that they are exchangeable producing units in the "healthcare industry." Only managers can control production, marketing, distribution, and finance; only managers can be in charge.

Young men and women applying to medical school have reason to be worried; they are about to prepare themselves to be "fit to conduct" the work of medicine, yet others, confusing and combining policy-making with administration, are bent on taking over. Running a hospital, medical group, or private office in a business-like way is one thing; running it as a business is quite another matter. Yet managers are by training conditioned to do just that. They may need reminding that their business is "mere facilitation."

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

REFERENCE

1. Barzun J: *The American University*, New York, Harper & Row, 1970, pp 114-115.

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BRIEF SUMMARY

CONTRAINDICATIONS
There are no known contraindications to the use of sucralfate.

PRECAUTIONS
Duodenal ulcer is a chronic, recurrent disease. While short-term treatment with sucralfate can result in complete healing of the ulcer, a successful course of treatment with sucralfate should not be expected to alter the post-healing frequency or severity of duodenal ulceration.

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Carcinogenesis, Mutagenesis, Impairment of Fertility: No evidence of drug-related tumorigenicity was found in chronic oral toxicity studies of 24 months' duration conducted in mice and rats at doses up to 1 gm/kg (12 times the human dose). A reproduction study in rats at doses up to 38 times the human dose did not reveal any indication of fertility impairment. Mutagenicity studies have not been conducted.

Pregnancy: Pregnancy Category B. Teratogenicity studies have been performed in mice, rats, and rabbits at doses up to 50 times the human dose and have revealed no evidence of harm to the fetus due to sucralfate. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when sucralfate is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children have not been established.

ADVERSE REACTIONS
Adverse reactions to sucralfate in clinical trials were minor and only rarely led to discontinuation of the drug. In studies involving over 2,500 patients, adverse effects were reported in 121 (4.7%). Constipation was the most frequent complaint (2.2%). Other adverse effects, reported in no more than one of every 350 patients, were diarrhea, nausea, gastric discomfort, indigestion, dry mouth, rash, pruritus, back pain, dizziness, sleepiness, and vertigo.

DOSAGE AND ADMINISTRATION
The recommended adult oral dosage for duodenal ulcer is 1 gm four times a day on an empty stomach.

Antacids may be prescribed as needed for relief of pain but should not be taken within one-half hour before or after sucralfate.

While healing with sucralfate may occur during the first week or two, treatment should be continued for 4 to 8 weeks unless healing has been demonstrated by x-ray or endoscopic examination.

HOW SUPPLIED
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References:
1. Korman MG, Shaw RG, Hansky J, et al: *Gastroenterology* 80:1451-1453, 1981.
2. Korman MG, Hansky J, Merrett AC, et al: *Dig Dis Sci* 27:712-715, 1982.
3. Brandstaetter G, Kratochvil P: *Am J Med* 79(suppl 2C):36-38, 1985.
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Confidentiality and AIDS: Public Policy Develops

JOSEPH M. HEALEY, J.D.

In my previous two columns,[1] I described the controversy surrounding the physician's conflicting duty to maintain confidentiality and duty to protect third parties who might be exposed to HIV infection by a patient unwilling to warn the third party about the potential danger of infection. The emerging consensus appears to be that, in this setting, the duty to protect will outweigh the duty to maintain confidentiality. Whether based on well-established principles of health law dealing with infectious disease, sexually transmitted disease, or mental health, it is assumed that cases involving HIV should be treated in this manner. Two of the leading commentators in this area have described the situation in the following terms:

> The duty to protect third parties from transmission of HIV arises in relation to specific persons who the physician knows are likely to have an intimate exchange of bodily fluids with the patient. The steps the physician must take to fulfill his "duty to protect" are unclear. But they at least include a threshold obligation to advise the patient of his responsibility to warn close contacts of his infection and to behave safely.
>
> Those who systematically screen for the presence of HIV antibodies take on duties owed both to the patient to keep test results confidential, and to third parties to protect them from foreseeable danger of conracting the infection. Physicians and public health officials, particularly in states with strict HIV confidentiality protections, face potential liability either way they decide. Clear confidentiality statues which make an explicit exception for foreseeable risk to specific persons, such as a spouse, are required.
>
> In the absence of such a statute, physicians should consider maintaining confidentiality by counseling patients to inform their sexual contacts. When there are strong clinical grounds for believing that a specific contact has not been informed who is in serious danger from exposure to HIV, then the prudent course for the physician is to notify the contact of the positive serological status of the patient.[2]

The American Medical Association House of Delegates approved a report at the June 1987 meeting which contained the following language:

> One of the more difficult issues for society is how to warn unsuspecting spouses or sexual partners of persons who test HIV positive. Such a warning would allow the third party to practice "safer" sex or to abstain from sexual relations with the infected person altogether. Given the life-or-death consequences, the unsuspecting third party should, as a general matter, be warned because there is no cure and because it may not be responsible to rely solely on the infected person to provide a suitable warning.
>
> Physicians who have reason to believe that there is an unsuspecting sexual partner of an infected individual should be encouraged to inform public health authorities. The duty to warn the unsuspecting sexual partner should then reside with the public health authorities as well as the infected person and not with the physician of the infected person.[3]

As these examples suggest, many issues remain with respect to satisfying the duty to protect parties. It is not at all clear how the duty to protect should be carried out. For example, the patient contemplating HIV antibody testing should be told that if the results are ultimately confirmed as positive, then a duty to third parties may exist which will require action. If anonymous testing is available in the community, this alternative should be described to the patient, so an informed decision will be possible. The threshold for determining whether a patient has acted responsibly toward third parties is not clear. Guidelines for physician intervention should be developed. Public health authorities need to develop mechanisms to notify affected parties, if they, rather than the individual physician, are to provide notification. As these examples suggest, there is much work to be done before the duty to protect can be discharged appropriately.

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JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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How Supplied: Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

References:

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
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3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
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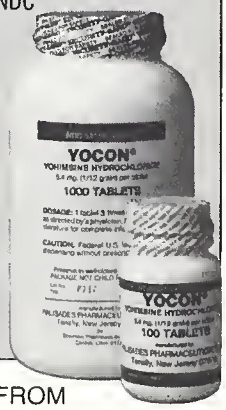

AROUND THE STATE

The Connecticut Neurological Society

The Connecticut Neurological Society has recently been reorganized after more than ten years of relative inactivity. The Society has elected Jan H. Mashman, M.D., Danbury, as president. The other officers include: Arthur Seigel, M.D., New Haven, vice-president; James O. Donaldson, M.D., Farmington, secretary-treasurer; Kenneth C. Siegel, M.D., representing Fairfield County; J. William Healy, M.D., representing Hartford County; Jack Finkelstein, M.D., representing Litchfield County; Moshe Hasbani, M.D., representing New Haven County; and David S. Thompson, M.D., representing New London County. Yale University School of Medicine is represented by John S. Ebersole, M.D., and University of Connecticut School of Medicine by Keshav Rao, M.D.

The Society is planning an all-day symposium on epilepsy for October 1988.

Visit by AMA Speaker of the House

John Lee Clowe, M.D., Speaker of the House of Delegates of the American Medical Association; visited Hartford on 26 and 27 October.

His schedule included an appearance on WTNH-TV Channel 8 News, a taping for a report by WFSB-TV Channel 3's Jim Vicevich, interviews with the Connecticut Radio Network and WPOP Radio, and a half-hour taped segment for the program "Today's Woman" on WTIC Radio.

Stamford Welcomes Surgeon General

U.S. Surgeon General C. Everett Koop, M.D., keynoted a November 23rd regional conference on AIDS sponsored by the newly-formed Steward B. McKinney Foundation.

Dr. Koop, speaking to an audience of 300 in Stamford's First Presbyterian Church, offered a grim prognosis on efforts to halt the spread of AIDS among intravenous drug users, many of whom may be illiterate. "You cannot educate them," Koop said. "That's the problem."

In other remarks, Koop noted the growing anxiety of health care professionals regarding HIV transmission, but stated such fears were groundless if CDC infectious control guidelines were followed. He acknowledged that some practitioners have refused to care for AIDS patients, but stated that in his opinion, the overwhelming majority of health professionals were providing compassionate care.

Dr. Koop also called for legislation which would prohibit discrimination against persons with AIDS.

From the Executive Director's Office

SUMMARY OF PROCEEDINGS
CSMS HOUSE OF DELEGATES—SEMI-ANNUAL MEETING

Ramada Inn, Meriden—November 19, 1987

Reports and Resolutions

The House of Delegates received reports from the President, the Council, the AMA delegation, the Executive Director, Connecticut Medical Political Action Committee (COMPAC), Connecticut Medical Management, Inc. (CMMI) and from M.D. Health Plan. Recommendations and resolutions were also received from the Council, county associations and CSMS committees.

Principal Actions Taken

(a) **Report of the President,** James P. Orphanos, M.D., Greenwich: The House voted to accept the report of the President, which included a report on legislation regarding medicare assignment, triplicate prescriptions, Connecticut Medical Insurance (CMIC), COMPAC, drug dispensing by physicians, PRO's and AIDS. The full text of his report was published in the December 1987 issue of *Connecticut Medicine.*

(b) **Report of the Council,** Guy W. Van Syckle, M.D., Danbury: The House voted to accept the report of the Chairman of the Council, which reviewed the activities of the Council since the last meeting of the House of Delegates. Minutes of the interim Council meeting have already been published in *Connecticut Medicine.* Special emphasis was placed on the voluntary medical courtesy card program, M.D. Health Plan, the 1988 Budget, CMIC transition, and the CSMS group purchasing plan. The actions taken on the Council's recommendation appear elsewhere in this summary.

(c) **Report of the AMA Delegation,** Stewart J. Petrie, M.D., Derby: The House voted to accept the report of the AMA Delegation, which was prepared by Stewart J. Petrie, M.D. The report contained the principle actions taken at the 1987 Annual Meeting of the AMA House of Delegates. The full report is published at the conclusion of this summary.

(d) **Report of the Executive Director,** Mr. Timothy B. Norbeck, New Haven: The House voted to accept the report of the Executive Director which discussed current Medicare legislation, long-term care, CSMS undertakings, such as the medical directory and group purchasing program and courtesy card program.

(e) **Connecticut Medical Political Action Committee (COMPAC),** Patrick J. Concannon, M.D., Chairman: Dr. Concannon acknowledged the highest COMPAC membership ever but expressed disappointment that more of our membership did not become involved in this program and stated that only through COMPAC can our legislative goals can be obtained. He urged greater participation by the membership.

(f) **Report of Connecticut Medical Management, Inc. (CMMI),** James P. Orphanos, M.D., President: The House voted to accept as information, the subject report, which gave an update on CMIC activities. It was reported that as of its fourth year of operation, October 1, 1987, CMIC has 2,271 policy holders. Among items of service to the policy holders during the past year were: Risk Management Seminars, Tort Reform Seminar, Initiation of a Premium Loan Program, Office Insurance Program, Innovative Premium Discounts for physicians over age 55, quarterly newsletter, etc.

Dr. Orphanos further reported on the CMIC transition. As of October 1, 1987, CMMI took over the operation of CMIC from American Health Systems, which originally had a three year contract to provide services as professional advisors. CMMI assumed responsibility for AHS personnel and all other operations of the company.

(g) **Budget for 1988:** The House voted to approve the budget for 1988, as prepared and recommended by the Council, and that the dues be set at $300.00.

(h) **Section on Neurology:** The House voted to approve the Council recommendation that the Section on Neurology be reinstated as an official section of the Society.

(i) **Proposed Amendment to the Bylaws:** An amendment to the Bylaws concerning Life Membership qualifications was presented to the House of Delegates on May 6, 1987 and was tabled for consideration and action at this meeting of the House of Delegates. It was voted to return this amendment to the Committee to Study Bylaws for further study and that the AMA provisions for Life Membership be considered and that the amendment should also include a grandfather clause.

(j) **AIDS:** It was voted to accept the AMA Board of Trustees Report on Prevention and Control of Acquired Immunodeficiency Syndrome as information with the understanding that a further definitive policy and recommendations were being developed for the CSMS Council and House of Delegates approval.

It was voted to table a report of the AMA Council on Ethical and Judicial Affairs which was to go before the AMA House of Delegates meeting in Atlanta December 6-9, 1987.

(k) **Unfinished Business:** Two resolutions, one on Physician Involvement in Walk-In Centers and another urging AMA support in urging national medical organizations to forego the scheduling of meetings anywhere within the boundaries of Massachusetts, were not acted upon due to the loss of a quorum.

AWARDS

CSMS Past Service Awards to Officers and County Councilors

OFFICERS

Isadore H. Friedberg, M.D. Newington	
Alternate Delegate AMA	1980-1987

COUNTY COUNCILORS

Litchfield County

Alfred J. Finn, M.D., Torrington	
Councilor	1986-1987

Hartford County

Roger S. Beck, M.D., Wethersfield	
Associate Councilor	1980-1983
Councilor	1983-1987

Windham County

Sherman L. Waldron, M.D., Thompson	
Associate Councilor	1981-1983
Councilor	1983-1987

Report of the Annual Meeting of the AMA House of Delegates

Chicago, June 21-25, 1987

Areas of major concern and debate are herewith noted:

(1) **AIDS.** This was given so much media coverage that it might seem to the casual observer that nothing else was accomplished but this one significantly large task. Report YY of the Board of Trustees is an excellent lengthy report which especially underlines the need for education to prevent the further worsening of this serious plague. At a state level, we should be prepared to not only participate in the education process, but to decide the proper role for routine screening. (Should jail inmates, applicants for marriage licenses, all hospital admissions, fever of unknown origins, etc. be screened mandatorily?) Such a mandatory project might be overwhelmingly costly, and thus the emphasis is on education as the first, but not the only step. The expanded policy position directs AMA to continuously monitor and analyze developments in AIDS and update policy and recommendations as dictated by advances in knowledge.

(2) **Foreign Medical Graduates.** This, and the item listed above, earned more heated and lengthy debate than almost any other item. Ultimately, it was decided that, in regard to educational requirements, FMG's should be equated with the United States graduates. Furthermore, the formation of a section of foreign medical graduates would not seem to answer the requirements and needs for such a separate section and was eventually voted down by a very large vote. (Unlike Young Physician Sections and Hospital Medical Staff Sections, it was felt that FMG's have satisfactory representation and input in the existing system.)

(3) **Health Policy Agenda (HPA).** A separate reference committee was quick to deal with this extremely lengthy and most important topic. Since I am on a committee (chaired by Dr. Frank Abbott) at a state level, I would prefer not to discuss this at this time since it will require discussion and action when our final report is received by the Council of CSMS. A progress report on this is forthcoming. I will be happy to answer any questions about the HPA in the meantime.

(4) **Medical Staff Section.** Much important work was done by this section to be sure that the needs of hospital medical staffs are being met, especially in the fields of DRG programs, PRO programs, and in some cases, redefining the role of the JCAH. This work included:

- a detailed description of the recently achieved agreement between the AMA, HCFA, OIG, and AARP concerning new procedures for PRO handling of sanction cases that assure greater due process protections for physicians.
- an expression of the AMA's view that PRO's should be oriented towards assuring quality through nonpunitive, educational approaches.

The House adopted policy calling on the AMA to continue to seek judicial, legislative and regulatory changes that will eliminate the Medicare maximum allowable actual charge (MAAC) regulations for participating physicians.

(5) **"Something is happening"** in three other important areas: National attention toward tort reform, Consideration of the previously submitted plan to entirely supplant the Medicare program, and lastly, Programs to enhance the physician's image in this era when we seem to hear and read nothing but bad things about ourselves.

(6) **An update on the RAP (Radiologists, Anesthesiologist, Pathologists) problem.** Notwithstanding the fact that relatively few doctors of this group have chosen to help the AMA by belonging, the AMA legislative effort worked on their behalf so as to avoid mandatory DRG status for these doctors, (as they did for all of us earlier).

(7) **Scientific Informational Reports.** Although no House action was required, the delegates received a record number of informational reports from the Council on Scientific Affairs. Of the 22 reports issued, 11 dealt with various aspects of AIDS. Other topics included:

- treatment of infertility
- colonic irrigation
- corneal transplantation
- evaluation of routine infant circumcision
- aversion therapy
- commercial hair analysis
- acid rain
- positron emission tomography

Single copies of these reports are available from the AMA's Division of Basic Science.

(8) **AMA Finances.** There will be no dues increase in 1988, but will likely be required in 1989 to support continued Association growth.

(9) **Dispensing by Physicians.** The issue of physicians dispensing drugs received much attention as the House sought to clarify AMA's position. After considerable discussion, the House voted to adopt the following policy statement:

> RESOLVED, That the American Medical Association supports the physician's right to dispense drugs and devices when it is in the best interest of the patient and consistent with AMA's ethical guidelines.

I stand ready to answer any quesions that the membership may have regarding this or other matters on the AMA. I again wish to convey the fact that the Connecticut delegation is a hardworking group. One of our delegates (Dr. Edward Kamens) is to be considered a candidate for the important Council on Medical Services. I am pleased that Dr. Van Syckle asked me to prepare this report on his behalf.

FOR THE CONNECTICUT AMA DELEGATION: Guy W. Van Syckle, M.D., Chairman, Frank K. Abbot, M.D., Edward A. Kamens, M.D., Stewart J. Petrie, M.D., Joseph Czarsty, M.D. (Alt.), Joseph S. Sadowski, M.D. (Alt.), William A. Whalen, Jr., M.D. (Alt.), Jerome K. Freedman, M.D. (Alt.).

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CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

EMERGENCY MEDICINE

Connecticut. Full-time position in Emergency Services at a greater Hartford area community hospital. Candidate should be BE/BC in Emergency Medicine or Primary Care. Competitive salary with a full benefit package. Send CV to Bradley Memorial Hospital, Personnel Department, 81 Meriden Ave., Southington, CT 06489.

Full time position available for an emergency physician in 225-bed community hospital in Eastern Connecticut with 40,000 ED visits yearly. Competitive salary, four weeks vacation, plus other excellent benefits. Send CV to G. Springer, M.D., Chief, Department of Emergency Services, The William W. Backus Hospital, 326 Washington St., Norwich, CT 06360.

FAMILY PRACTICE

BC/BE family practitioner to join same in active growing diverse practice in Central Connecticut. Attractive salary package leading to partnership. Please send resume to CSMS, c/o FP/LB.

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Excellent opportunity for a BC/BE family physician or internist to join an established practice located in central Connecticut shoreline town. Affiliation with hospital provides for minimal time commitment to administrative detail. Practice structured on private practice model. Hospital practice component required. Very competitive compensation, with opportunity to acquire equity interest in practice. Send CV to CSMS, c/o FP/GO.

Full time FP/IM needed for moderate-sized community Health Center in Hartford for July, 1988. Regular hours, no weekends, full benefits, including malpractice. Four weeks vacation and all major holidays. Competitive salary offered. EEO. Please contact Dr. Kurt Myers, 81 Overlook Terrace, Hartford, CT 06106.

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Doctors wanted for a small growing Health Care Facility in East Hartford, CT. Excellent way for new doctors to start up a practice. Please call or write: V.I.P. Health & Safety, 800 Silver Lane, Suite 201, East Hartford, CT 06118. (203) 569-3640.

INTERNAL MEDICINE

Internist BC/BE with or without subspecialty wanted for growing two-physician group in southwestern Fairfield County. Excellent opportunity for combining active primary care practice with local hospital teaching responsibilities. Please reply to CSMS, c/o IM/RM.

Internist, BC/BE to join established internist in beautiful northwest Connecticut. Modern office across from hospital. Excellent practice opportunity. Contact Dr. Richard Collins, P.O. Box 1168, Sharon, CT 06069.

MISCELLANEOUS

Salaried physician to run medical office in Windsor, Connecticut. Excellent opportunity. Equity position available. Full benefits. Send confidential resume to: P.O. Box 99, Windsor, CT 06095.

BE/BC physician (IM, FP, ER, SUR) is needed to staff an extended hour private practice in Simsbury, CT. Practice includes internal medicine, endocrinology, minor non life-threatening trauma and some pediatrics. Part time or full time hours are available. Salary is negotiable. Please send CV to or telephone: Dr. Beth Hodge, 153 Westledge Rd., West Simsbury, CT 06092. (203) 651-5278.

OBSTETRICS & GYNECOLOGY

N.W. Connecticut B.C. solo OBS/GYN seeks associate to join well-established practice. Part time possible. Please send CV to CSMS, c/o OB/KD.

Excellent opportunity for a BC/BE, OB/GYN to join an established two-person practice in central Connecticut. The position would involve devoting half-time to private practice and half-time as Medical Director of hospital-sponsored OB program. OB program responsibilities include supervision and training of residents. Competitive salary and fringe benefits. Send CV to CSMS, c/o OB/GA.

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Grove Hill Medical Center. A 42-physician multispecialty group, including five pediatricians, seeks a highly qualified Pediatrician to develop the specialty within a neighboring satellite facility. This position affords the opportunity for association within one of the East Coast's most respected group practices; generous salary and benefits, and earned partnership status. Please forward copy of CV to: Administrator, Grove Hill Medical Center, 300 Kensington Ave., New Britain, CT 06501.

Female pediatrician seeks BC/BE associate for growing established practice near New Haven. Competitive salary and benefits with early partnership. Please send CV with references to CSMS, c/o PED/EJ.

PRIMARY CARE

Physicians—Full time/Part time for Walk-Ins in West Haven, Milford and Danbury. Send resume to CSMS, c/o PC/BY.

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ANESTHESIOLOGY

Immediate available. Age 47. Presently in practice. AB cert. MD, Kanazawa University School of Medicine, Japan; Int., Muhlenberg Hospital, Plainfield, NJ; Res., The Johns Hopkins Hospital, Baltimore, MD. No preference to size or type of practice. Write, Shigeru Ueda, M.D., 2070 E. Wyoming, Las Cruces, NM 88001.

FAMILY PRACTICE

July '87. Age 36. Presently in practice. Nat'l bds. AB cert. D.O., Philadelphia College of Osteopathic Medicine, Philadelphia, PA; Int., Naval Reg. Medical Center, Jacksonville, FL; Res., Naval Hospital, Camp Pendleton, CA. Prefers solo, group or associate type practice in a medium-sized community. Write, William B. Glenn, D.O., 2 Raintree Way, Havelock, NC 28532.

GENERAL SURGERY

Aug. '88. Age 31. Presently in practice. Nat'l bds. AB cert. MD, University of South Florida, Tampa, FL; Int. and Res., U.S. Naval Hospital, San Diego, CA. Prefers solo, group or associate type practice in a medium-sized practice. Write, Laurier J. Tremblay, Jr., M.D., 11830 Caminito Ronaldo #224, San Diego, CA 92128.

July '88. Age 33. AB elig. MD, Turin University, Italy; Int. and Res., New Rochelle Hospital, New Rochelle, NY. Prefers solo, group or associate type practice. Write, John S. Ciocchi, M.D., 80 Guion Place, Apt. 3W, New Rochelle, NY 10801.

INTERNAL MEDICINE

July '88. Age 45. Licensed in Connecticut. FLEX. AB elig. MD, USSR, Kiev Institute of Medicine, USSR; Int. and Res., St. Mary's Hospital, Waterbury, CT. Particular interest in taking care of elderly. Write, CSMS, c/o MB/IM.

Gastroenterology. July '88. Age 32. Licensed in Connecticut. Nat'l bds. AB cert. (IM); AB elig. (GI). MD, Albert Einstein College of Medicine, Bronx, NY; Int. and Res., Hartford Hospital, Hartford, CT; Fellowship, Chief Resident, Hartford Hospital/University of Connecticut Health Center, Farmington, CT. Prefers group, associate or institutional type practice. Write, K.J. Roalsvig, M.D., 65 Maplewood Ave., W. Hartford, CT 06119.

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Driving and Epilepsy

The Case for Reform in Connecticut

ARTHUR M. SEIGEL, M.D.

In 1906, Thalwitzer described the first automobile accident caused by a seizure. From then until 1970, no one with epilepsy could legally drive in Great Britain.[1] Thirty years ago, only one-half of the states in this country granted driver's licenses to people with any kind of epilepsy.[2] Since that time, laws regarding driving and epilepsy have become more realistic, but the laws in different states and countries have come to varying degrees of legal clarity and interpretation. The relative responsibilities for both the epileptic person and his physician also vary but fall into one of two major categories. In the more common category, the state places upon the patient the obligation and responsibility for reporting epilepsy to the motor vehicle bureau. Alternatively, Connecticut is among a minority of states which still regards epilepsy (or syncope) as a reportable disease that requires mandatory reporting to the Commissioner of Health who in turn is obligated to report to the Motor Vehicle Department. In either case, the physician is expected to inform his patient about what state law requires for driving.

Some state laws are directed solely at epilepsy. Other states, such as Connecticut, include both syncope and epilepsy in their reporting requirements. The laws in many states including Connecticut, however, are vague particularly as they do not distinguish between groups at higher risk for recurrent seizures and low risk groups. Spudis[3] et al suggests a format for limitations in drivers with epilepsy or syncope based on risk factors such as idiopathic *vs* symptomatic cases, neurological findings, and duration since previous attack. Their suggested range for limitations is from three months to 12 months depending upon combinations of these factors. Another group would be that subpopulation of epileptics who only suffer seizures during sleep. Drivers in Great Britain who have seizures during sleep have different limitations from those with daytime attacks.[4] Another instance, not well defined in Connecticut law, pertains to the person who suffers a seizure following a change in medication. In Minnesota, for example, the law stipulates that if a seizure is due to a change in medications directed by the physician, no cancellation of driving privileges necessarily occurs.[2] If the seizure was due to the patient's own non-compliance with medications, then a 12-month cessation of driving is required.

Studies show that drivers with epilepsy have a higher accident rate than non-epileptics by a ratio of aproximately two to one. This kind of data should be put in context, however. Epileptic women have fewer accidents than non-epileptic men, for example.[5] Also, the kind of accident caused by epileptics may differ from the general population. In a Netherlands study of such accidents, published in *Epilepsia* in 1975, 80% of accidents due to seizures occurred outside "built-up areas," and 80% were single vehicle accidents. In the general population, 80% of accidents occurred in "built-up areas" and 75% involved multiple vehicles. The author speculates that the increased attention paid by an epileptic patient in city driving may inhibit seizure activity (based on observations by Paulson and Symonds among others).[6] Furthermore, it is estimated that fewer than one in 5,000 accidents are related to seizures, whereas, over half of the fatal accidents in this country involve drunk drivers. Although appropriate measures should, therefore, be implemented for any limitations for drivers with epilepsy, seizures are clearly a low priority factor to be considered when society seeks to prevent fatalities on the road. Connecticut is among a minority of states which places responsibility upon the physician for reporting drivers with epilepsy or syncope to the state. Failure to report such a driver to the state constitutes an infraction of law for which the physician can be held liable. Most states place the responsibility for compliance with driving laws on the patient, except for the case where the person with recurrent seizures fails to comply with the law, and that fact is known to the physician. By placing the physician in the role of informer to the state, the doctor-patient relationship is placed in jeopardy. It is likely that this would lead to patients "going underground," or at least withholding important clinical information from their physicians because of fear of repercussions. These patients may fear not only the loss of license but stigmatization from society if their physicians are required to inform an

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ARTHUR M. SEIGEL, M.D., Assistant Clinical Professor, Neurology and Pediatrics, Department of Neurology and Pediatrics, Yale University School of Medicine; Attending Physician, Hospital of St. Raphael.

agency of the government.[7] If public safety has to be placed above the doctor-patient relationship, it would be more reasonable to require physicians to notify the state of anyone being treated for alcoholism or a personality disorder. It is of some concern that over 50% of patients in the study by Quaglieri[8] and 43% in the study by Stanaway[9] reported that the law regarding seizures was not discussed with them by their diagnosing physician. Despite variability among the states and countries regarding driving laws and epilepsy, it is generally considered the reponsibility of the diagnosing physician to inform the patient of their responsibilities for driving if they have seizures. This is usually done when discussing general recommendations with patients about management of their seizures. This led the Commission for the Control of Epilepsy and its Consequences to recommend in its publication in 1978 that the "primary responsibility for reporting must reside with the afflicted individual, but that this individual needs to be informed for his responsibilities. . . . The patient should be notified in writing and the notification should be recorded in the patient's record in order for the physician to be relieved of any responsibility should an accident occur."[5]

In view of the improvements and refinements of laws regarding driving and epilepsy during the past 30 years, it is time for Connecticut State Law to be better defined. Recommendations may include a self disclosure law such as that recommended by the National Institutes of Health Commission. A panel of neurologists and attorneys working as a committee reporting to the state legislature could help develop criteria for limitations of driving as well as penalties for non-compliance with the requirement for self-disclosure. Furthermore, risk factors which might make a recurrent seizure more or less likely could be factored into the limitations so that they would better separate high-risk groups from low-risk groups. The result of reform in the law could result in better protection not only of epileptic patients, but also of the general population.

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Cardiac Rhabdomyosarcoma

JEFFREY N. KATZ, M.D., DENNIS L. COOPER, M.D., LEONARD FARBER, M.D., AND KIM J. PANOSIAN, M.D.

ABSTRACT—A 26-year-old female with cardiac rhabdomyosarcoma is presented. The patient underwent subtotal resection of the tumor and received both local radiation therapy and chemotherapy with vincristine, dactinomycin, cyclophosphamide (VAC), and doxorubicin. Despite therapy, she developed widespread metastatic disease and died six months after diagnosis. This is the first case in which the pathologic diagnosis of cardiac rhabdomyosarcoma was made primarily by immunohistochemistry. Electron microscopy was later used to confirm the diagnosis. This is also the first case of cardiac rhabdomyosarcoma reported in association with significant thrombocytopenia. The thrombocytopenia and pathologic diagnosis are discussed and the efficacy of various treatment modalities is reviewed.

Primary cardiac tumors are rare, with an incidence of 0.001 to 0.28% in autopsy series.[1,2] One quarter of these are malignant, and about 20% of malignant cardiac tumors are rhabdomyosarcomas, neoplasms of striated muscle origin.[1] Fewer than 50 cases of cardiac rhabdomyosarcomas have been reported with less than ten reported in the past decade.[3-11] The published literature allows clinical characterization of these tumors: constitutional symptoms are common[1,2] as are congestive heart failure,[1,2,4,7,8,9,10,11] chest pain,[1,2,11] mitral and tricuspid murmurs,[1,9,10] abnormalities of the cardiac silhouette on chest x-ray,[1,3,8] ECG abnormalities including right bundle branch block,[1,2,3,4] and various degrees of atrioventricular block.[3,11] Pathological examinations have revealed that the tumors usually originate in one of the atria, frequently prolapse into the adjoining ventricle,[4,9] and can grow into the pulmonary vessels.[1,4,8,11] Survival beyond two years is rare[1] and widespread metastases are commonly found at autopsy.[1,2,3,4,8,9,11] The infrequent occurrence of these tumors has precluded systematic study of approaches to therapy.

In the present summary of a 26-year-old female with an invasive cardiac rhabdomyosarcoma, we present a hitherto unreported finding, profound thrombocytopenia. We also describe the importance of immunohistochemistry in establishing the pathological diagnosis. Finally, we discuss options for therapy including consideration of organ transplantation.

Case Report

The patient is a 26-year-old white female who had no prior medical problems. She developed progressive cough, orthopnea, exertional dyspnea, and fleeting anterior chest pain in the ten weeks prior to admission. Serial x-rays showed progressive bilateral pulmonary infiltrates and elevation of the left mainstem bronchus without obvious cardiac enlargement. The patient was suspected to have sarcoidosis and an outpatient CT scan of the chest was performed to evaluate hilar adenopathy. She had an episode of pulmonary edema while lying on the CT scanning table. The study revealed a 4.5 cm left atrial filling defect, confirmed by echocardiography. The patient was admitted for emergency surgery.

Preoperative physical exam was notable for a diastolic rumble, lower lobe rales, and the absence of splenomegaly. Her laboratory reports showed a white blood cell count of 28,000 with a normal differential, a sedimentation rate of 28, and a platelet count of 56,000. The peripheral blood smear showed no evidence of microangiopathic hemolysis, and the prothrombin and partial thromboplastin times were normal, as were her blood chemistries. ECG revealed a sinus rate of 145 with right axis deviation.

At surgery the patient was found to have a fleshy tumor fixed to the posterior wall of the left atrium with a 2 cm tongue that extended through the mitral valve with 1-1.5 cm projections growing into each pulmonary vein. The cardiac chambers were otherwise normal. Because the mass invaded the atrial wall and pulmonary veins, macroscopic disease was left unresected.

The pathology specimen consisted of an 8.5×2.0×0.8 cm fleshy and focally hemorrhagic mass taken from the left atrium with one elongated portion that had extended

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into a pulmonary vein (Figure 1). Microscopically the tumor was diffusely composed of spindle-shaped large pleomorphic cells with a high nuclear to cytoplasmic ratio, hyperchromatic nuclei with numerous mitotic figures, and pink to amphophilic cytoplasm (Figure 2). No definite evidence of skeletal muscle, vascular, or other specific differentiation could be seen on routine hematoxylin and eosin staining. Numerous areas of necrosis with focal hemorrhage were identified. By immunoperoxidase technology, the cells sporadically continued desmin and myoglobin. They were not positive using Ulex, Factor VIII, carcino-embryonic antigen (CEA), keratin, vimentin, and S-100. Electron microscopy showed intermediate-sized microfilaments with condensations consistent with Z-band material (Figure 3). The pathologic diagnosis was pleomorphic rhabdomyosarcoma.

The patient tolerated the procedure and cardiopulmonary bypass without incident. Her platelet count increased to 150,000 postoperatively. Noncontrast CT scans of the head, chest, and abdomen, as well as a bone scan, revealed no evidence of metastases. Coumadin therapy was initiated to protect against thrombus formation at the site of resection.

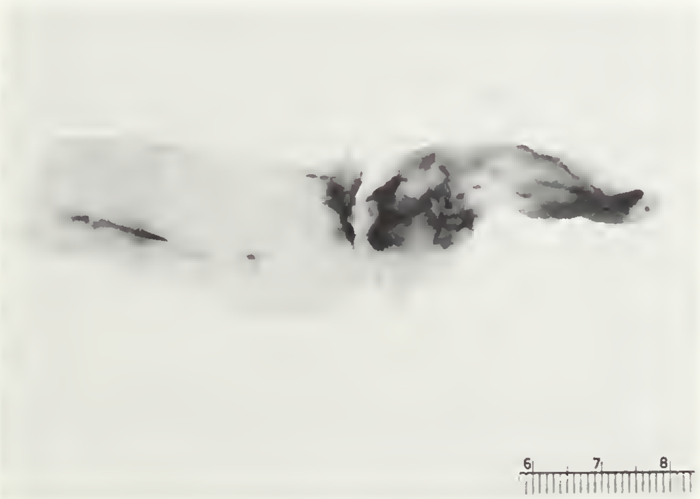

Figure 1

The left atrial tumor grossly with elongated portion that extended into a pulmonary vein.

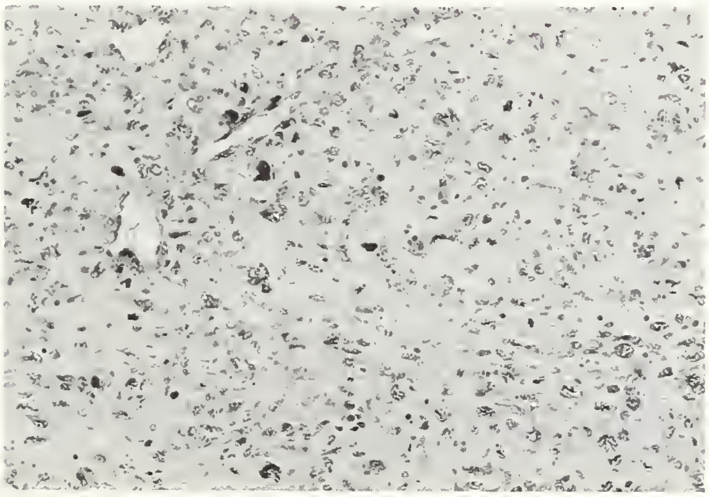

Figure 2

Light photomicrograph showing pleomorphic tumor cells with several mitoses (x40).

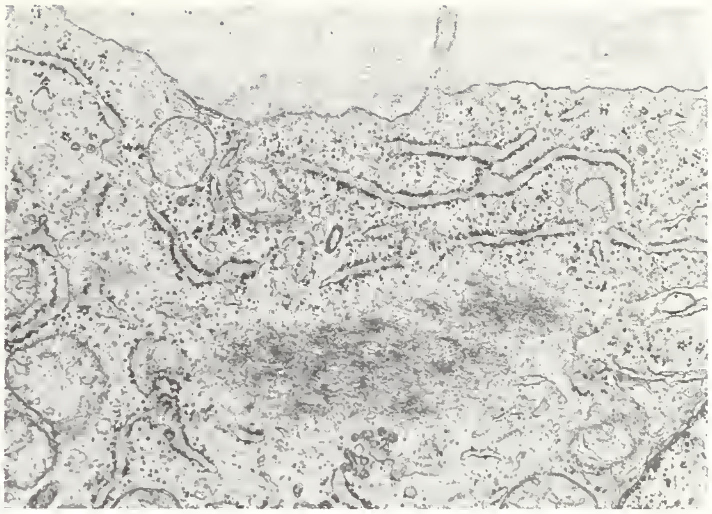

Figure 3

Condensation of intermediate-sized microfilaments within cytoplasm of tumor cell, consistent with Z band material (x30,000).

The patient received a VAC chemotherapy regimen consisting of dactinomycin 0.5 mg daily for five days, cyclophosphamide 10 mg/kg/day for three days, and vincristine 2 mg IV weekly for three weeks, then 1 mg weekly for five additional weeks. She also received 4,000 rads of external beam radiation to the entire heart.

She continued to have malaise and dyspnea, though echocardiograms showed no change in the size of the residual left atrial mass. Nine weeks after resection, two cycles of doxorubicin 50 mg/m^2 were added with some symptomatic improvement. However, 13 weeks after diagnosis, memory deficits were noted prompting a CT scan which revealed a left parietal defect consistent with metastatic disease. She received cranial irradiation with diminution in the size of the lesion. However, 16 weeks postoperatively new lung nodules were noted on chest x-ray. The patient refused further therapy at that point and died at home 26 weeks after diagnosis. Autopsy revealed metastatic pleomorphic rhabdomyosarcoma with discrete lesions in the right and left lungs, the pleura, the anterior superior mediastinum and anterior neck, and in the left parieto-occipital and right occipital regions of the brain. Platelet counts remained normal throughout the course of her disease.

Discussion

Many features of our patient's presentation were typical of reported cases of cardiac rhabdomyosarcoma. These included the symptoms of chest pain and congestive heart failure, the tumor location in the left atrium with extension into the ventricle and pulmonary veins, and the development of widespread metastatic disease despite institution of combined modality therapy.[1,2] Three aspects of the case are distinctive and merit further consideration.

Thrombocytopenia

The patient presented with profound thrombocytopenia which resolved promptly after surgery. She is the first reported patient with cardiac rhabdomyosarcoma to present with thrombocytopenia. The etiology of this abnormality is not clear. The normal red blood cell morphology, prothrombin time, and partial thromboplastin time argue against major disseminted intravascular coagulation although fibrinogen and fibrin degradation products were not measured. The rapid and sustained recovery of the platelet count after surgery is not consistent with bone marrow invasion. She was not using marrow toxic medication. Lack of blood clot, as in the resected tumor specimen, makes tumor platelet sequestration unlikely. Tumor associated idiopathic thrombocytopenic purpura has been reported in patients with a variety of tumors;[13-20] this diagnosis therefore remains a possibility. Finally, low grade consumptive coagulopathy has recently been reported in association with a left atrial mural thrombus;[21] the possibility that our patient's intracardiac mass similarly incited a low grade consumptive coagulopathy also cannot be excluded.

Pathologic Examination

The role of immunohistochemistry and electron microscopy in fascilitating the diagnosis of undifferentiated tumors has been demonstrated in this case. The value of immunohistochemistry lies in the ability of even poorly differentiated malignant cells to maintain the ability to synthesize the same proteins as their normal cellular counterpart. Although the technology now exists to determine the potential presence of a large number of cytosolic proteins, the first step usually is an attempt to determine the type of intermediate filaments produced by the malignant cells. Each cell usually synthesizes one type of intermediate filament and the type of intermediate filament provides evidence for the ancestry of the cell. Thus, a positive stain for keratin implies an epithelial origin of the tumor despite an undifferentiated appearance on hematoxylin and eosin stain. Similarly, positive vimentin and desmin stains provide evidence for mesenchymal and muscular origin respectively. In this case the positive test for desmin confirms that the tumor was derived from muscle, while the positive myoglobin stain points to a striated rather than smooth muscle etiology. Negative Ulex eruopeus I (a plant lectin) and factor 8 stains provide evidence against a tumor derived from vascular endothelium. The negative S-100 mitigates the diagnosis of melanoma or a neuro-tumor. The finding of Z band material on electron microscopy confirms the diagnosis of rhabdomyosarcoma. Several articles in the past decade have described the usage of routine histologic examination to diagnose cardiac rhabdomyosarcomas.[3,4,8,9,10,11,12] A few investigators have utilized electron microscopy as well.[4,12] To our knowledge this is the first reported case in which the diagnosis was made primarily by utilizing routine staining and immunohistochemistry with electron microscopy used simply to confirm the diagnosis. Kahn et al have recently published a methodical approach to the immunohistochemical study of undifferentiated tumors involving the skin. In their study immunohistochemical studies provided the cellular origin of 20 "undifferentiated" tumors.[22]

Management: Since the advent of cardiopulmonary bypass, debulking surgery for patients with cardiac rhabdomyosarcoma has been well tolerated but all patients have had recurrence of disease, usually in less than one year after surgery. Radiation therapy[8] and unspecified cytotoxic agents[3,23] have been administered without demonstrable benefit. The rhabdomyosarcoma intergroup data[24] indicates that more complete resections were associated with better outcomes. These authors used vincristine, dactinomycin, cyclophosphamide (VAC), and radiation therapy in children with residual disease after resection from a variety of primary sites and achieved 53% complete and 29% partial response rates. However, none of their patients had primary sites in the heart and most had embryonal histology rather than pleomorphic as in our patient. Karakous et al[25] treated five adult patients having rhabdomyosarcoma with doxorubicin, cyclophosphamide, vincristine, and dacarbazine. Two of the five had partial responses but none had tumors originating in the heart. The success of external beam irradiation in childhood rhabdomyosarcoma is well established, even as primary therapy,[26] but insufficient information is available to evaluate its role in cardiac rhabdomyosarcoma.

As complete surgical resection was not possible, and because multimodality therapy has produced no cures in patients with residual disease, consideration was given to heart transplantation. Over 1,000 cardiac tranplantations have been performed in specialized centers since 1967 with encouraging results.[27] The experience in patients with neoplastic disease, however, is limited. The Stanford group published a case of a 17-year-old with a left ventricular fibroma who was well 18 months after transplantation.[28] In addition, Pomerance and Strom reported a case of cardiac transplantation in a patient with a low grade neurofibroma.[27] Their review did not mention the patient's outcome. Our patient had residual disease in her left atrium and pulmonary veins and hence would have required a heart-lung transplant. There have been no heart-lung transplants for malignant disease.

Organ transplantation also raises the question of whether immunosuppression would promote the growth of distant micrometastases in patients receiving transplants. This issue is particularly germane to cardiac rhabdomyosarcomas which have been found at autopsy to metastasize widely.[3,4,8,9,11] The experience in the renal transplantation literature does suggest that immunosuppression may unveil previously silent disease[29] but these data are limited.

The limited number of donor organs also raises the ethical question of whether patients with a malignancy and potential metastatic disease should receive a transplant when a patient with non-malignant disease could potentially benefit. Hence, the decision of whether cardiac or perhaps even heart-lung transplantation in these patients is complex and unlikely to be easily resolved.

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Primary Tracheal Carcinoma Presenting with Acute Respiratory Failure

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ABSTRACT—We report two patients with primary tracheal carcinomas presenting with acute respiratory failure. The diagnosis was established by endoscopy and intratracheal biopsy. These cases illustrate the problem of delay in diagnosis of upper airway obstructing lesions and emphasize that tumors of the larynx and trachea should be considered as potential causes of acute respiratory failure in patients previously thought to have diffuse airway obstruction.

Introduction

Primary tracheal tumors are rare and often unrecognized or misdiagnosed as diffuse airway obstruction.[1-3] The early manifestations of tracheal tumors are often nonspecific, and localizing signs and symptoms may not appear until the tracheal lumen is 75% compromised.[3] Although attention has been called to this problem, a delay in the diagnosis of tracheal tumors continues to be observed and may limit available treatment options.[2] We recently detected primary tracheal carcinomas in two patients in whom upper airway obstruction was not suspected until the development of respiratory failure.

Report of Cases

Case 1.

A 63-year-old male nursing home resident was admitted to the Newington Veterans Administration Medical Center on 19 July 1986 with a one week history of increasing shortness of breath.

There was a history of diabetes mellitus, cigarette smoking, and dyspnea attributed to chronic obstructive lung disease. The patient denied chest pain, fever, chills, productive cough, dysphagia, or loss of body weight. On examination, he was confused, had tachycardia and tachypneo. There were bilateral expiratory wheezes and an inspiratory stridor. A chest x-ray was unremarkable. Arterial blood gases and pH drawn while the patient was breathing room air were: $PC0_2$ 58, $P0_2$ 43, and pH 7.34. Complete blood cell count, urinalysis, and electrolytes were normal. A lateral x-ray film of the neck was reported as normal. His $P0_2$ improved with supplemental oxygen and aerosolized bronchodilator, but the tachypnea, tachycardia, stridor, and wheezes persisted. An otolaryngology examination revealed normal vocal cords and epiglottis. He was not able to cooperate for a flow-volume loop or spirometry. Fiberoptic bronchoscopy was attempted, but the patient developed severe respiratory distress and the procedure was aborted. On 23 July the patient's dyspnea worsened, as did his stridor, and he became more hypoxemic in spite of the administration of 50% oxygen by mask, aerosolized bronchodilator, intravenous aminophylline, and corticosteroids. A difficult intubation was finally accomplished with a No. 6 endotracheal tube, after which the stridor disappeared. Tracheostomy was then carried out, as well as a laryngoscopy which revealed an exophytic intratracheal mass just below the vocal cords occluding more than 50% of the lumen and extending longitudinally over three tracheal rings. Biopsies showed a poorly differentiated squamous cell carcinoma. A computerized tomographic (CT) scan of the chest showed that the tracheal lesion had not involved the mediastinum or lung parenchyma.

Case 2.

The patient was a 57-year-old male construction worker who had been admitted to the Newington V.A. in July 1986 for evaluation of increasing shortness of breath and choking sensation.

The patient had a ten-year history of asthmatic bronchitis and cigarette smoking and had been treated with an inhaled bronchodilator. Two months prior to this admission, he presented with acute respiratory failure requiring intubation and mechanical ventilation at another hospital. He recovered from that episode but had to be readmitted to this hospital one week after discharge because of worsening dyspnea and persistent choking sensation. On both of those admissions sputum specimens were obtained for cytology and were reported as class 3. Pulmonary function studies were not obtained on these occasions. His physical examination showed a heart rate of 120, blood pressure of 160/90, and a respiratory rate of 28. Initial evaluation revealed inspiratory stridor with scattered expiratory wheezing. There was no clubbing of the fingers, cyanosis, or edema. A chest x-ray film revealed no infiltrates or enlarged lymph nodes. A CT scan of the chest revealed a lesion in the distal trachea just above the carina, and subsequent bronchoscopic examination revealed an obstructing lesion of the trachea occluding 50% to

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60% of the distal trachea. Biopsies on initial bronchoscopic examination were reported to show benign inflammatory tissue. The patient was transferred to another center where a distal tracheal resection with primary reanastomosis was performed; pathological examination of the specimen revealed an undifferentiated carcinoma primary in the trachea with extension through the tracheal wall into the lymphatics. However, four of the four lymph nodes were negative for carcinoma. Follow-up radiation therapy was performed to the distal trachea and the patient is presently doing well.

Discussion

Tracheal tumors are approximately 100 times less common than bronchial tumors. In children, 90% of tracheal tumors are benign while in adults, malignant tumors predominate.[4] Squamous cell carcinoma accounts for about 50% of primary tracheal malignancies.[1,2,5] The majority of these originate from the posterior or posterolateral distal one-third of the trachea. Adenoid cystic tumors comprise 30% of tracheal malignant neoplasms. Unlike other tracheal carcinomas, they frequently originate in the upper third of the trachea with endophytic infiltration occurring both horizontally and vertically.[1,5]

Advances in surgical technique have made successful resections possible in selected patients with tracheal malignancy. Although the results of surgery are best for the heterogeneous group of patients with benign tumors, prolonged survival has been reported with localized tracheal carcinomas provided that resection can be accompanied by primary airway repair.[5] In 1983, Grillo reported that 24 of 35 patients with squamous cell carcinoma and adenoid cystic carcinoma resected between 1962 and 1981 were alive without disease.[6] In this and other series, patients with squamous cell carcinomas have had the poorest results.[1,6,7] Considerable palliation of unresectable carcinomas may be achieved with irradiation or laser resection.[6,8] However, potentially curative therapy is limited to more localized and biologically favorable tumors. Because of the common delay in diagnosis, many tracheal carcinomas are detected in a more advanced, unresectable stage. The failure to make an early diagnosis of tracheal tumors, illustrated by these two cases, results from nonspecificity or lack of physical findings in the early course of the disease, inexperience of physicians with this rare cancer, and inadequate radiographic examinations.[2]

The clinical presentation of exertional dyspnea, wheeze, and cough is often attributed to diffuse airway obstruction and treated accordingly. The diagnosis is more difficult when patients have coexisting diffuse airway obstruction with varying degrees of response to bronchodilators or corticosteroids. The presentation of hemoptysis and stridor usually lead to prompt diagnostic evaluation. However, hemoptysis is not invariably present, and stridor is a late finding, especially with intrathoracic tumors.[3] Certain physiologic tests, such as flow-volume loops showing a characteristic shape, may first suggest the presence of an upper airway obstruction.[9] However, the interpretation of these test results may be difficult when the patient is uncooperative or cannot generate enough vital capacity. The value of the radiographic examination in diagnosis is often underemphasized.[2,3] Conventional chest roentgenography may be inadequate, since a lesion may be obscured by superimposed soft tissues or bony structures. Therefore, standard PA and lateral chest roentgenograms are supplemented with right and left anterior oblique films, as well as lateral neck and high kilovolt films of the entire trachea, with copper filter technique if necessary.[3] If an abnormality is suggested, tomography may be needed for better definition; CT scanning may also be used for this purpose. In the evaluation of a group of patients with adenoid cystic carcinoma, CT scans were found to demonstrate accurately the primary tumor, and extraluminal growth was visualized better than with standard radiographs.[10] CT scans also accurately revealed the tracheal lesions in our two patients and both patients tolerated the examination well. However, CT scanning has been found to be a poor predictor of the longitudinal extent of tumor as well as mediastinal organ invasion. Therefore, its role in the evaluation of tracheal tumors for resectability is not well defined.[10] Endoscopy should follow radiographic detection of a tracheal tumor, but may be used as an initial diagnostic approach in selected patients with obvious upper airway obstruction. Because localizing signs and symptoms may be late findings, we feel that patients with a nonspecific but compatible presentation who respond poorly to therapy directed at diffuse airflow obstruction should be evaluated with flow volume studies if possible, followed by adequate radiographic and, when necessary, endoscopic assessment of the larynx and trachea. Gratifying results may be obtained by detecting early and appropriately treating localized tracheal tumors.

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Important Advances in Clinical Medicine

Radiology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in radiology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in radiology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Radiology of the California Medical Association and the summaries were prepared under its direction.

Angiographic Diagnosis and Therapy for Impotence

Until recently, impotence was considered largely psychogenic in origin. Following the development of new angiographic methods for diagnosis, it has become apparent that impotence is vasculogenic in at least 50% of patients (63 of 100 in our series). Within our vasculogenic group, 25% had arteriogenic, 37% venogenic and 38% both arteriogenic and venogenic impotence.

A reliable diagnosis requires special angiographic techniques. Arteriography must be done during penile arterial vasodilation, which is usually achieved by intracavernosal injection of 30 to 60 mg of papaverine hydrochloride mixed with 1 mg of phentolamine. Selective internal pudendal arteriography, direct double magnification and nonionic contrast agents are also important adjuncts. Using these refined methods, the dorsal penile and cavernosal arteries—and even the very fine (about 0.25 mm diameter) helicine branches of the cavernosal arteries—are almost always visible in normal persons. Outpatient studies are feasible and enable angiography in a much expanded population. Arteriogenic impotence is diagnosed in the presence of bilateral penile arterial occlusion or significant stenoses.

Cavernosal veno-occlusion is now recognized to be an intrinsic property for normal dilated corpora cavernosa and a necessary prerequisite for erection. Veno-occlusion develops through compression of small subtunical veins by the expanded cavernosal lacunae. The competence of the veno-occlusive mechanism can be evaluated by pharmacomanometry. After the lacunar musculature is fully relaxed by intracavernosal injection of the papaverine-phentolamine mixture, the cavernosal pressure response to an infusion of saline solution or dilute contrast is measured. It is apparent that the normal corpora cavernosa, during erection at systemic cavernosal pressures, leak at a rate of only 2 to 8 ml per minute. Leakage at rates between 20 and 40 ml per minute can contribute significantly to impotence. Leakage at rates above 60 ml per minute, a rate that exceeds potential arterial inflow, constitutes overt venogenic impotence. The routes of leakage can be evaluated by cavernosography.

Preliminary experience suggests that a combination of coils, absorbable gelatin sponge (Gelfoam) and sclerosing agents is effective in obstructing the venous drainage and in enabling return of erectile function. Transcatheter venosclerosis seems to offer several significant advantages over surgical litigation, not the least being the ease with which the deep perforators and their recipient veins can be obstructed, as opposed to the difficulty of surgical access for ligation of these veins. For arteriogenic impotence, arterial bypass procedures will probably be the usual procedure of choice. Occasionally, however, the obstructive disease is anatomically suitable for transluminal angioplasty.

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Duplex Sonographic Diagnosis of Deep Venous Thrombosis of the Leg

Deep venous thrombosis of the leg is a common disorder and one that is frequently misdiagnosed clinically. Venography has for many years been the gold standard for diagnosis. Nevertheless, concern over possible complications of venography and postmortem studies showing that it is not 100% accurate have led to the development of duplex Doppler sonography to establish the diagnosis.

Duplex real-time sonography combines high-resolution imaging and pulsed Doppler waveform analysis. It has the advantage that it can directly image thrombi and detect abnormal Doppler flow signal. It therefore combines anatomic detail with physiologic evaluation of venous flow. Duplex sonography is comparatively inexpensive, well tolerated, involves no ionizing radiation or contrast material and is not uncomfortable for patients.

Various duplex sonographic findings suggest the diagnosis of deep venous thrombosis. The normal deep veins of the leg are readily compressible when light pressure is placed on the ultrasound transducer, and they have a characteristic audible venous "hum" with the Doppler signal. Thrombosed veins are not compressible, and flow is absent. During the Valsalva maneuver, normal major veins distend significantly. The signs of deep venous thrombosis include direct visualization of thrombi, a lack of venous compressibility, an abnormal response to the Valsalva maneuver and an absent or abnormal Doppler venous signal.

In a prospective study comparing duplex Doppler sonography with contrast venography in 54 patients, sonography had a 91% sensitivity for thrombi in the common femoral vein and a 94% sensitivity for thrombi in the superficial femoral or popliteal veins. There were no falsely abnormal examinations. Abnormal Doppler flow and an abnormal response in the common femoral vein to the Valsalva maneuver enabled the detection of thrombi localized to the common femoral or iliac veins.

The main limitation of duplex sonography is its inability to reliably image deep venous thrombosis of the calf. Due to its favorable imaging characteristics and its high reliability, duplex sonography is likely to become a screening method for patients with suspected deep venous thrombosis involving either the common femoral, superficial femoral or popliteal veins.

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Magnetic Resonance Imaging and Pelvic Abnormalities

In its short four-year period of clinical application, magnetic resonance imaging (MRI) has already made a significant impact on the assessment of male and female pelvic abnormalities. The display of pelvic anatomy is unique on MRI: for example, in the male pelvis, it clearly differentiates the zonal anatomy of the prostate; in the female pelvis, it shows both the zonal anatomy of the uterus and changes in the uterine zones during the menstrual cycles. Its greatest contribution, however, has been in evaluating congenital anomalies and male and female infertility and, most importantly, in the staging of pelvic neoplasms. In all three applications, the advantage of MRI lies in its ability to provide direct multiplanar imaging and superb soft-tissue contrast resolution. Magnetic resonance images display a large field of view, and a patient's habitus does not degrade the image.

In the evaluation of congenital anomalies of sexual differentiation, the excellent depiction of the pelvic anatomy on MRI contributes to patient management. In studies of male infertility, MRI shows the presence, size and symmetry of the seminal vesicles, and, through its display of the signal intensity of seminal vesicles, primary or secondary tumors are well visualized. In cases of female infertility, small submucosal leiomyomas, adenomyosis and abnormalities of the corpus uterus or cervix are well displayed.

The most important role of MRI in the pelvis, however, is in the staging of pelvic neoplasms. Its reported accuracy in prostate carcinoma is between 83% and 89%, surpassing that of computed tomography and transrectal ultrasonography. In evaluating bladder tumors, MRI accurately images tumors located at the bladder base or dome and differentiates tumor from surrounding bladder wall hypertrophy or scar tissue—a unique application of this method. In staging endometrial carcinoma, MRI not only displays tumor volume and provides excellent overall accuracy (92%), but also provides an assessment of transmyometrial invasion, which is an important prognostic factor. In cases of cervical carcinoma, tumor location, size, extension and paramatrial and sidewall extension are well depicted.

In conclusion, MRI is valuable in assessing pelvic abnormalities and is especially contributory in the staging of pelvic neoplasms.

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Magnetic Resonance Imaging of the Liver

Recent technical and clinical advances in magnetic resonance imaging (MRI) of the liver have improved image quality and reduced artifacts and imaging times. These advances now make it possible for MRI to challenge computed tomography as the optimal screening method for detecting liver neoplasms.

Artifacts have been reduced by MRI software that incorporates flexible pulse sequence selection, respiratory and cardiac gating, fast scanning techniques, multiple signal averaging and gradient rephasing approaches. While much work still needs to be done before MRI hepatic images are completely free of artifacts, rapid progress is likely to continue.

Recent clinical comparisons between magnetic resonance and computed tomography (CT) in detecting hepatic tumors show that magnetic resonance is better than CT for lesion detectability by 14% and specificity by 9%. A study from the National Institutes of Health showed that magnetic resonance can detect 95% of liver metastases versus 50% for unenhanced CT studies. Thus, it appears to be better than CT for detecting liver lesions and may become the procedure of choice for diagnosing liver metastasis.

Hepatic magnetic resonance contrast agents are being evaluated and hold great promise for detecting liver cancers and for further increasing specificity. Administering intravascular contrast agents such as gadolinium pentetic acid (trisodium zinc diethylenetriaminepentaacetate, DTPA), coupled with new dynamic magnetic resonance techniques, permits the evaluation of tumor vascularity.

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Temporomandibular Joint Radiology Update

Magnetic resonance imaging (MRI) with small surface coil receivers appears superior to computed tomography (CT) for visualizing the articular discs in both the normal and displaced configurations of the temporomandibular joint. MRI promises to give sufficient detail of the soft tissues of the joint so that using the more invasive positive contrast arthrography may no longer be necessary. Whether or not perforations and tears of the disc can be diagnosed and the state of the bony articular surfaces can be defined still need investigating. Correlative studies need to be done to document the sensitivity and specificity of MRI.

There are still investigative and clinical roles for CT and arthrography. CT may be indicated in communities where MRI is not yet available to screen for disc displacement. In patients with trauma, CT is superior to both conventional radiography and MRI for showing fractures and bleeding. Altered bony joint components and degenerative changes are better seen with CT. Arthrography may be an important test to consider for preoperative evaluation, particularly if CT or MRI findings are equivocal for showing the articular disc. Its ability to show disc movement during function is unsurpassed.

Because of the expense of these sophisticated tests, the significant x-ray exposure from tomograms, arthrography and CT and the current lack of one test to satisfy all diagnostic requirements, the use of these tests must be tailored to each patient. For patients with acute trauma, CT is the first choice. When a clinical evaluation points to disc dislocation, unnecessary x-ray exposure and expense can be avoided by going directly to MRI. A patient with longstanding joint problems may be best examined with CT, particularly if a screening radiograph shows joint deformity.

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Prenatal Diagnosis of Central Nervous System Abnormalities

As ultrasound image resolution has improved, its role as a low-risk imaging modality for detecting fetal morphologic abnormalities has dramatically increased. Abnormalities of the central nervous system (CNS) have been particularly well studied because the fetal head is routinely imaged in the course of pregnancy dating, CNS abnormalities are relatively common and there is interest in preventing the devastating clinical consequences of many of these abnormalities.

The most common congenital CNS abnormalities are the neural tube defects—anencephaly, encephalomeningocele, myelomeningocele—occurring in aggregate in about 0.2% of births. Anencephaly is readily detectable sonographically from the end of the first trimester onward. Encephalomeningocele and myelomeningocele are detectable by 18 to 20 gestational weeks in most cases. Because 90% of these defects occur sporadically, detecting these abnormalities based on ultrasound screening alone is not practical. Patients with elevated maternal serum or amniotic fluid α-fetoprotein levels constitute a high risk-group for neural tube defect and should be evaluated with high-resolution sonography. The state of California has instituted a statewide maternal serum AFP screening program that should allow detection of the vast majority of neural tube defects.

Fetal cerebral ventricles can be consistently visualized from early in the second trimester. This allows detection of hydrocephalus, which may occur as a result of aqueductal stenosis, the Chiari II malformation associated with myelomeningocele or other causes. Anatomic features usually allow distinction from other causes of dilated cerebrospinal fluid spaces, including hydranencephaly and holoprosencephaly. The posterior fossa can also be well imaged, allowing prenatal diagnosis of the Dandy-Walker malformation.

When ultrasonography detects a definite or possible CNS abnormality, a follow-up examination is frequently useful to further characterize the anomaly, follow progression or plan treatment. In cases of diagnositic difficulty, a second imaging modality—intrauterine magnetic resonance imaging or computed tomography—can be useful. This is necessary in only a small percentage of cases, however.

Because many of these abnormalities are rare, referral to a center specializing in prenatal diagnosis may be indicated. An accurate prenatal diagnosis of CNS abnormalities allows informed patient counseling. This may result in terminating the pregnancy or optimizing obstetric and neonatal care to allow the best possible outcome.

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Percutaneous Gastrostomy

The ability to create a gastrostomy by using percutaneous techniques without general anesthesia has simplified patient care. Total parenteral nutrition can frequently be replaced with percutaneous enteral feeding in acutely or chronically ill patients in whom the gastrointestinal tract is intact and functioning. Medical costs can be significantly reduced. Long-term nasogastric feeding is uncomfortable and problems of reflux and esophagitis are common. Percutaneous gastrostomy can largely eliminate the problem of reflux, particularly if the feeding is done in the jejunum.

The stomach is ideally suited for placement of a percutaneous tube because it is a "self-sealing" system. Three layers of interlacing muscular fibers contract around the tube, preventing significant leakage. When a surgical gastrostomy is done, the muscle fibers are cut, and it is therefore necessary to suture the stomach to the anterior abdominal wall to prevent leakage.

Several techniques are available for placing a percutaneous gastrostomy. Using fluoroscopy, the stomach is initially inflated with air and, under fluoroscopic guidance, is punctured with a needle and a guide wire is inserted. A small catheter is placed over the guide wire and, under fluoroscopic guidance, the guide wire is advanced beyond the ligament of Treitz. The tract is then serially dilated and a sheath is placed. A 12 French catheter is advanced over the guide wire and through the sheath until the tip is beyond the ligament of Treitz.

The endoscopic technique requires the placement of an endoscope in the stomach. A puncture is made and the wire is grasped and removed through the mouth. A long tapered catheter is then fed over the guide wire and exits the anterior abdominal wall at the puncture site. All systems work well with a low rate of complications. The endoscopic technique is somewhat more expensive due to the need for an endoscopy.

A percutaneous gastrostomy can be done on an outpatient basis and, after a short period, oral and enteral feedings can begin. If the gastrostomy is no longer needed, it can simply be removed.

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New Developments in Contrast Media

Three low-osmolality contrast agents have recently been approved by the Food and Drug Administration. These agents are nonionic media iohexol (Omnipaque, Winthrop-Breon Laboratories) and iopamidol (Isovue, E.R. Squibb & Sons, Inc) and the dimeric media ioxaglate meglumine and ioxaglate sodium (Hexabrix, Mallinckrodt, Inc). These substances differ from the current ionic media in that there is about a third of the osmolality per given iodine concentration (degree of radiographic opacification). Thus, hyperosmolarity-induced reactions to contrast media are lowered with the new agents. Side effects attributable to hypertonicity include hypervolemia; deformity of erythrocytes; damage to vascular endothelium with consequent activation of blood coagulation, the complement system and fibrinolysis; increased release of bradykinin and histamine; cardiac arrhythmias; diuresis; vasodilatation and decreased blood pressure; pain, and heat sensation. All of these reactions are significantly decreased with the new low-osmolality contrast agents.

Contrast media also possess intrinsic molecule-specific properties that may be toxic. When the chemotoxic effects of the new contrast agents are compared with conventional ionic agents, a close correlation exists between systemic toxicity, as measured by the median lethal dose (LD_{50}), and enzyme (acetylcholinesterase) inhibition and protein binding. The protein-binding capacities of contrast agents can be expressed in ratio form as iothalamate: ioxaglate: iopamidol: iohexol = 4:3.5:1.5:1. Iohexol, with the lowest protein-binding capacity and enzyme inhibition, also has the lowest systemic toxicity as measured by LD_{50}. Chemotoxicity may play a role in such side effects as vasodilation and flushing, bronchospasm and urticaria.

Conventional contrast material can produce acute renal insufficiency. The incidence varies from 0.6% with intravenous procedures to 2% for angiographic procedures. Patients with preexisting renal disease are at increased risk for contrast media-induced nephrotoxicity. The new low-osmolality agents in theory should produce less renal damage. A few reports have shown less renal toxicity, as measured by enzymuria, with iopamidol and iohexol as compared with conventional ionic agents.

The low-osmolality agents have less hemodynamic and electrophysiologic effects when injected into the heart compared with conventional agents. In the pulmonary circulation, the low-osmolality agents produce less elevation of pulmonary artery blood flow and pressure compared with conventional ionic agents.

Iopamidol has been shown to produce half the histamine release of diatrizoate. Nausea and vomiting and urticaria occur more frequently with the use of ioxaglate compared with iohexol and iopamidol. The newer contrast agents have not been used long enough to evaluate the incidence and severity of reactions. In Europe where these agents have been in use longer, there are some data accumulating indicating that rates of minor, moderate and severe reactions are less for nonionic media. Again, the small number of cases limits the conclusions that can be drawn.

At present the new low-osmolality agents are ten times more expensive compared with conventional ionic agents. The new agents should be used selectively in patients known to have an increased risk for reactions.

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Reexamining the Principles of Medicine

SAMUEL O. THIER, M.D.

The medical profession has been remarkably successful in the past fifty years. In achieving this success, it has had to reach compromises with many of its fundamental principles. However, these compromises have become so important in providing stability to the system that the profession has come to protect them instead of the principles. Until we readdress those principles, we will drift farther from the purposes of the profession, putting at risk a social contract that is thousands of years old and upon which our respect and autonomy depend.

While medicine has been party to change before, no change has been as swift and cataclysmic as that taking place today in medical care organization and delivery. During this period, certain principles should guide the medical profession's responses to the issues it faces. Fundamentally, medicine must behave as a learned profession if its social contract with society is to be maintained. To define this goal, I have modified Louis Brandeis's definition of a profession to fit medicine.[1] First, a learned profession is a keeper of a body of knowledge, a substantial portion of which derives from experience. Second, it is responsible for advancing that knowledge and transmitting it to the next generation. Third, it sets and enforces its own standards, and values performance above financial reward. And last, it is directed by a code of ethics that includes service to others. This Commentary will address how well medicine as a profession is performing relative to the principles embodied in this simple definition.

Medical Knowledge and Education

Medical education in this country is about a hundred years old.[2] Reforms began after the Civil War, a period during which medicine performed abysmally. A plan for the modern medical educational system was recognizable by the 1890s. The three principles of that educational revolution were simple. First, the science underlying medicine would be linked to practice. This link was achieved whenever possible by placing medical schools in the university setting. Second, the apprentice system would be replaced by a supervised, organized, clinical education experience through which all graduates of medical schools would pass. Third, whenever possible, medical schools would stress concepts rather than simply teaching facts by rote.

Medical education based on these principles has been successful but is in need of careful reexamination. Science and practice have changed dramatically in the past century. The traditional organization of medical schools into two years of basic science and two years of clinical studies was a structure to implement the educational principles. Unfortunately, this traditional organization has become a structural impediment in the evolution of medical education.

At present, medical education can be conceptualized as comprising these three levels of science: fundamental science, bridge or system science, and clinical science. Fundamental science now comprises such sciences as molecular and cell biology, biophysics, chemistry, and behavioral sciences, which are not necessarily medical school sciences. Indeed, they may equally well be university-based since they are important to all life sciences. Now may be the time to link medical schools more firmly, via these fundamental sciences, to the parent universities. Two benefits would derive from a more binding relationship: a greater sharing of activities in the fundamental sciences could take place, and universities could more readily nurture their medical schools. The nurture could be both intellectual and protective. If in the next few years, for example, National Institutes of Health (NIH) support of research declines or there is less clinical income for medical schools, universities would have a real stake in medical schools and would wish to preserve them rather than allowing them to remain separate and wither.

In considering such change, we would have to determine how vigorously we wish to protect the existing structure of our medical schools. Such protection would come at the expense of the benefits medical schools could derive by reaching out to the broader university scientific community. Medical schools ought to consider not only greater sharing of the fundamental sciences with the rest of the university but also reemphasizing that such medical school-based sciences as pathology, physiology, and immunology are bridge or system sciences. These sciences would apply the methodologies of fundamental sciences in a systems approach and would serve as a bridge

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between the fundamental and clinical sciences. From the bridge sciences, where the clinical investigators and the system and fundamental scientists would meet in my model, the clinical scientists would bring basic insights back to the bedside. Additionally, the model would bring public health and medicine back together in the clinical sciences.

In this country, traditional medicine with a focus on mechanisms of disease effectively cut off public health and its attention to epidemiological questions.[3] Because of this separation, we in traditional medicine developed a clinical approach that was not couched in terms of society's needs. Thus, in debates about the best use of health resources, we frequently lack data to defend our practices and to document their usefulness in a broad population. Public health, on the other hand, often had too little clinical perspective in its questions. Although beautifully designed to get statistical answers, the questions often had very little clinical relevance and were, therefore, ignored by traditional medicine.

These two cultures in our system must be merged. In my mind, clinical science is the merger of the two disciplines, and the joining together of public health and traditional medicine into a health science educational program will be necessary in the next few years. Without this merger, the voice of medicine will be weakened greatly in debates and decisions about the introduction, dissemination, and support of new medical technologies, procedures, and approaches.

The credibility of the medical profession can be further enhanced if we examine the numbers of medical students we wish to educate. That is a difficult issue. I believe we are on a trajectory similar to that which dentistry has already traveled. In the 1960s and 1970s, the dental profession did much the same thing we have done: they expanded from forty to sixty schools, while medicine went from eighty to approximately 120 schools. Now, because there no longer are enough qualified applicants to fill entering classes, dentistry is cutting the entering class back from 6,300 to 4,500 but is not closing a proportional number of schools. Rather than phasing out some lesser-quality institutions, they are cutting classes across the board, thus lowering the average quality of dental schools.

It is not too early for medicine to be facing those decisions. We are certainly training enough physicians. The last correction we made turned a perceived deficit of physicians into a massive excess in about ten years. I think we can readjust more slowly, but we must begin now. The medical profession as a whole could benefit from examining today's situation as the surgical services did a few years ago, when they admitted frankly that they were training too many surgeons and began to make hard decisions about closing programs. It is the only positive example that I can recall in which we have controlled our own growth in medical education.

Lately, the level of humanity among medical students has received much attention. I do not believe that the interns, residents, and medical students that I have dealt with in the last twenty-five years are inhumane, not in the least. I believe that they are under tremendous pressures. The changes in the system that have occurred in the last ten years, such as putting more and sicker people into university hospitals, have made the situation more difficult. Concern about inhumanity and excessive scientific foundation of our interns, residents, and medical students, however, is generations old, and although it requires constant attention, it is also evidence of medical advancement.[4] When one stops hearing that new graduates are too scientific, it means the field is not advancing. Also, when one does not hear that there is more humanity in the person who has been in practice for ten or twenty years, then something is wrong with what that physician has learned over time.

Standards in Medicine

Another of the basic principles of a learned profession is that it sets its own standards and values performance above reward. The medical profession has evolved boards for certification, which have long served the purpose well. However, in recent years, the boards have at times descended into territorial disputes among the various medical specialties. They also have become a target of hospitals who view a change in standards as a possible change in operating costs. If physicians fail to guard their standards of practice, the growing corporate practice of medicine will gain control of the process. If that happens, the social contract held by our profession will be sundered.

It is in the area of financial compensation that the medical profession is most criticized by the public. When a patient is not given a colonoscopy because the insurance company pays only $100 instead of $500, are we, as physicians, saying that we would not do a procedure that was indicated because it was reimbursed at one level instead of another? If so, let us face ourselves and defend it; if not, we should not rationalize it.

We need to ask: What is the basis for colonoscopy reimbursed at $500, or for any technologic imperative that drives cost without necessarily driving improvement in health? Could we redistribute the payment for health care to bring more people care over a longer period of time—without tremendous impact on physicians' incomes—by changing from a technologic imperative to a primary care and preventive imperative?

We also should be more professional in how we examine and evaluate what we do. That is, how do we measure the quality of the care that is delivered, both by physicians and by the system, and how do we deal with those circumstances in which the performance is not up to standard? There is no perfect quality assessment mechanism. If we argue that we will not introduce quality assessment unless it is perfect, then, simply, somebody else will impose assessment on the medical profession, and we again will have given up our professional responsibility.

Medical Ethics

The principles of the medical profession will be tested, perhaps as never before, as our commitment of service to others is challenged by the limits being placed on resources and by the swelling number of elderly and medically indigent people. We may be running out of money, and we discuss limiting access to care. In the face of these challenges, we will have to ask how to provide equitable care to our aging population, and to grapple with the fact that Medicare in its present form, in my opinion, is doomed. We will not be able to continue Medicare by nibbling around the edges at a claims payment system that tries to address catastrophic care and ignores long-term care. To the extent that we as a profession do not speak out, we are not meeting our responsibilities. We must admit that we are supporting a system that will not serve the aging population of the next thirty years and that we will need to help reorganize and restructure that system. Also, we have a tradition in medicine of caring for the under- and uninsured. There is no reason to assume that physicians will not continue to include as part of their professional activity a service to the indigent and that the cost will not be shared by the hospitals and by society. There must be an equitable distribution of responsibility in this, with physicians taking an active part.

While medicine's ethical standards require that we enter the debate about the future of medical care in an informed fashion, I caution that one cannot serve simultaneously as advocate and judge. A physician caring for a patient should not at the same time be making resource allocation judgments. That does not mean that medicine cannot bring its perspective and knowledge to the discussion of how society uses its resources. It only means that these roles must be separated so that physicians are always trusted to be undistracted advocates for their patients.

As we look to the future, I believe that the changes now occurring will go further. It will help nobody to agonize over these changes or to tell students not to enter medicine. There are many opportunities and possibilities that we should be grasping in medicine. Those that seek to preserve the status quo ought to examine what they are protecting and whether it is based upon the principles I have outlined or upon the fear of change. A reorganization, a rejoining, and a recommitment to the basic principles of advancing medical knowledge, transmitting it to the next generation, enforcing quality standards, and operating under a code of ethics that includes service to others, is essential. Also, a little idealism would not hurt as we face our continually evolving system of medicine.

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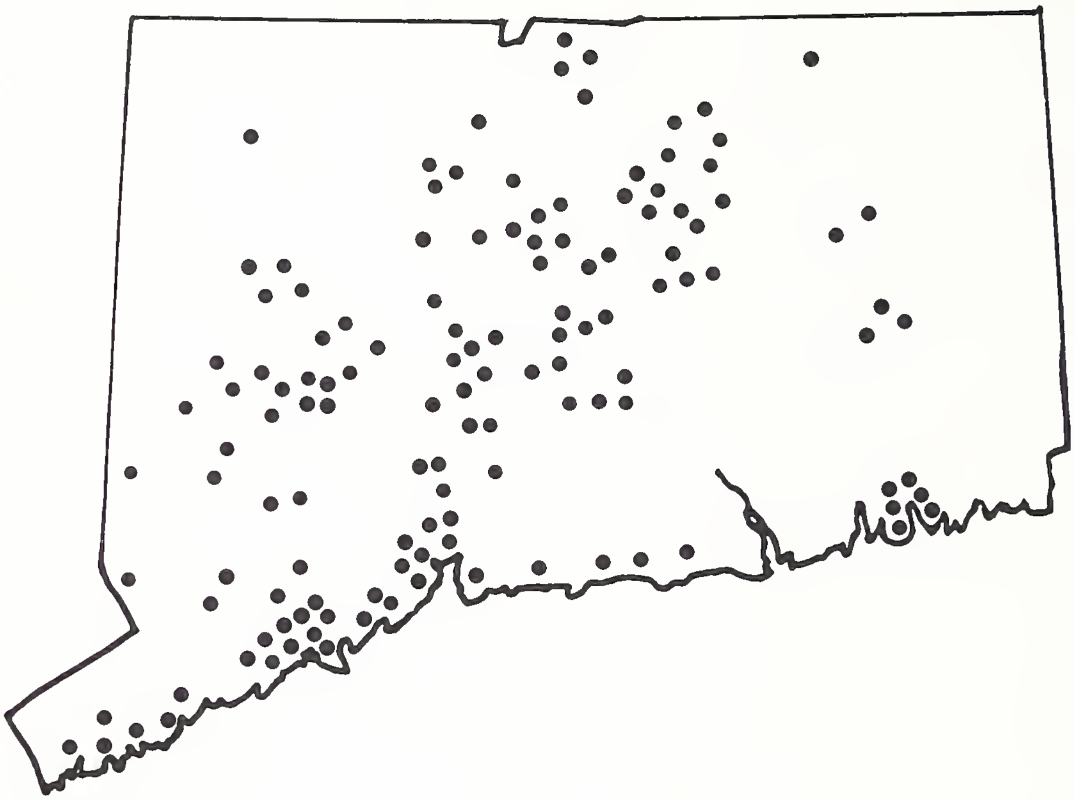

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Malpractice, Informed Consent, and the Use of Low Osmolality Contrast Media

J. MICHAEL EISNER, ESQ. AND BRIAN J. CASEY, ESQ.

ABSTRACT—New low osmolality contrast agents recently have become available. Their cost, however, is ten to 20 times the cost of existing contrast agents. Because of the claims in early studies that the use of these agents dramatically lowered the risk of serious reactions or death in imaging procedures, physicians have expressed concern that they are confronted with a Hobson's choice—either use the new agents and face serious reimbursement problems, or forego their use and face claims of failure to obtain informed consent and malpractice. We surveyed the medical literature in order to see whether the claims in the early studies were accurate, and have concluded that they do not appear to be accurate. We nevertheless present a framework for physicians to use in assessing the legal risks presented whenever a physician fails to use a contrast agent which from a medical point of view is the agent of choice.

Introduction

This article addresses the legal issues (malpractice and informed consent) raised by the availability of new low osmolality contrast agents which have been claimed to materially reduce the risk of complications in imaging procedures.

In the course of our inquiry, it became apparent that many radiologists have not been obtaining the patient's informed consent before performing imaging procedures involving the use of contrast agents presenting risks to the health of the patient. We therefore address the issue of informed consent at length.[1]

Questions of Fact

In order to analyze the legal questions, factual issues are important; for example: the cost of the new agents, the increased cost of various procedures using the new agents, the risks associated with the use of the old and the new agents, and the extent to which insurance companies and others will pay for the use of the new agents.

Risk

There is no clear agreement in the literature as to the precise indications for every use of low osmolality agents, nor is there agreement in regard to the magnitude of the risks involved in their use. Interestingly, there also appears to be no general agreement about the magnitude of the risks involved in the use of the older agents. Until a consensus develops among leading radiologists as to which agents should be used for which patients, and as to what the probable risk factors appear to be based upon studies which have been generally recognized as valid, it will be impossible to arrive at definitive decisions about the appropriateness of the use or nonuse of particular agents whether from a medical or a legal point of view.

The best formulated positions we have found are those articulated by Lasser et al and by Bettmann. These experts suggest that: agents have to be carefully selected depending upon the particular patient and his needs; it is not recommended at this time that the newer agents should be used universally; and, it is not clear that the newer agents are significantly safer than the older agents except in certain specific situations.

A summary of the literature by Latchaw[2] cites a study indicating that the risk associated with the use of conventional ionic contrast agents is about 1/2,000 for a "severe" reaction and 1/20,000 for death. A West German study cited by Latchaw[3] suggests an overall "severe" reaction rate of 1/10,000 for low osmolality contrast media, with no reported deaths in a study involving some 50,000 patients. Other statistics cited by Latchaw include claims that by using the new agents the risk of death might be reduced to as low as 1/166,000, or even as low as 1/500,000.

Other commentators, however, suggest conclusions which are inconsistent with the conclusions cited by Latchaw.

Salem[4] et al in 1986 wrote that:

> the hemodynamic effects during left ventriculography using diatrizoate and iopamidol are similar. These findings do not justify the large-scale substitution of more expensive contrast agents for standard ionic agents such as diatrizoate in left ventriculography.

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Michael Bettmann, M.D., Associate Professor of Radiology at the Harvard Medical School, who has written extensively about the use of contrast agents, suggested during a recent symposium on "Understanding Contrast Media,"[5] that:

(1) there are no single or simple answers to questions about indicated use and risk;
(2) recent research has not definitively answered these questions;
(3) low osmolar agents can be improved in various ways and sometimes are the agents of choice;
(4) some patients with a history of reactions should be pretreated with steroids prior to contrast administration;
(5) some patients with serious cardiac problems should be studied with low osmolality agents or diluted ionic agents;
(6) the low osmolality agents appear to significantly reduce minor reactions and patient discomfort from such reactions *but may not significantly reduce the chance of serious reactions including death;* and
(7) the risk of death from the use of low osmolality agents is not clear and has varied from study to study, although several credible studies suggest a risk similar to that associated with agents presently used.

In addition, Bettmann cites a Mayo clinic study[6] which indicated that the risk of death using the old agents was 1/75,000. He also has pointed out that in order to arrive at conclusions about the frequency of risk, one must conduct studies involving tens of thousands of patients.

In an article published by Bettmann and Morris prior to the symposium,[7] similar conclusions were reached:

> Conventional ionic monomeric contrast agents have a remarkable safety record, but it is clearly far from perfect. Many of the effects of these agents can be related to their marked hyperosmolality in relation to blood. Other effects are probably dependent on the ionic nature of these agents, the direct chemical effect of the compounds, and certain conventional additives. The newer contrast agents probably have a slightly to moderately improved margin of safety. Much of their increased safety is related to the marked decrease in osmolality, although the osmolality at the usual iodine concentrations is still twice that of blood. It is useful to note that dilute solutions of ionic monomers, as currently used for digital subtraction angiography, have a similar osmolality and produce fewer side effects, in particular decreased pain and discomfort.
>
> Even if there were no price differential, it is not yet clear, from experimental studies and clinical experience, that the three new agents are in fact safer overall.... The three recently approved lower-osmolality agents probably decrease discomfort and improve the margin of safety (to an as-yet-undetermined extent) in certain patients at particular risk. It is useful to think of these new agents as new weapons in the armamentarium of physicians, ones, it is hoped, that not only will make studies safer but also will bridge the gap to still safer and more reasonably priced agents.

Lasser et al[8] conclude that:

> ...the much less expensive ionic medium, if administered with corticosteroid pretreatment, may serve as a reasonable alternative to intravenous nonionic medium, without loss of safety.
>
> The use of conventional ionic mediums with appropriate pretreatment could save several hundred million dollars per year in future expenditures in the United States alone, without any apparent sacrifice of safety. Currently, nonionic mediums cost roughly ten to 20 times more than comparable ionic mediums. We believe that the data in this report provide evidence that may be useful to radiologists in considering these difficult options.

According to Lasser, the risk of death using standard ionic agents is between 1/12,000 to 1/75,000.

In an editorial in *The New England Journal of Medicine,* accompanying and commenting on the Lasser study and providing his perspective on contrast agents, Bettmann writes:

> The question of overall safety of these new agents, however, is not yet resolved. They are clearly as safe, in general, as conventional agents, and they offer improved comfort—an important consideration in certain types of radiographic studies.
>
> In patients with marked anxiety or those in whom pain, nausea, or vomiting might be hazardous because of underlying cardiac, pulmonary, or central nervous system disease or because of resultant inability to cooperate, one of the three low-osmolality agents should be used...

Cost and Reimbursement

The literature we have reviewed repeatedly suggests that the cost of the new agents is approximately ten to 20 times the cost of present agents.[9] One radiologist indicated to us that for his hospital the cost would be 25 times more expensive than present agents because of the discounts the hospital is receiving on agents presently being used.

A very important question of fact for decisions by physicians in regard to the extent the new extremely expensive agents are to be used obviously is whether third-party payers (Blue Cross, Medicare, private insurance companies, etc.) will pay for the use of the agents, and whether hospitals and physicians could look to patients for payment of any portions of bills which are not paid by the third party. If it ever should be concluded that the agents should be used widely but are so expensive that wide use would place the provider of services in a condition of financial jeopardy, there might be no alternative but to

(1) assume the legal risks associated with a failure to use them for all patients, (2) provide certain patients with a choice, or (3) take appropriate steps, including litigation if necessary, in order to force third parties to pay for their use.

The extent to which third-party payers will reimburse radiologists and hospitals for the cost of the new agents is not yet clear. Presently, most Blue Cross/Blue Shield plans have not changed their reimbursement policies to include coverage of the higher cost agents. The Blue Cross/Blue Shield Association, however, has established a study group which is examining the issue. To date, Medicare also has not amended its payment schedules to reflect the costs of the more expensive agents.[10]

If past reimbursement history is predictive, we anticipate that private insurance companies, including Blue Cross/Blue Shield plans, generally can be expected eventually to reimburse providers of care for the cost of the more expensive agents when used in accordance with prevailing practice. Following prevailing practice, of course, could mean that they will reimburse only for high-risk patients who clearly need the more expensive agents. Medicare similarly can be expected to build the costs of the more expensive agents into its reimbursement formulae, but we anticipate a time lag before this occurs.

Legal Issues: Informed Consent and the Standard of Care

To the extent that there is prevailing opinion that certain agents produce a dramatically lower frequency of serious reactions than others or are the agent of choice for other demonstrable reasons, the following claims could be fashioned on behalf of a patient who was not given a preferred contrast agent and who then died or was seriously injured: (1) not offering the patient a choice to have the preferred agent used constitutes a failure properly to inform (ie, a failure to obtain informed consent); (2) not using the preferred agent for a patient for whom it could have been used constitutes negligence (ie, a breach of the requisite standard of care). A plaintiff would win his case if he prevailed on either of these claims.

Informed Consent

General Considerations

A number of states including Connecticut[11] have adopted the "patient-oriented" standard of disclosure for obtaining informed consent. The patient-oriented standard ordinarily requires that the patient is entitled to whatever information a reasonable patient could expect to receive in order to make an informed determination as to whether or not he would consent to the procedure.

Under the patient-oriented standard of disclosure, the physician is required to disclose all *known material* risks.[12] A risk is "material" if a "reasonable" person in the patient's condition would consider it significant in deciding whether or not to have the procedure performed. Materiality is a function not only of the severity of the possible harm, but also of the likelihood that the risk will occur. Regardless of the severity of a potential injury, courts have held that if the probability of a risk occurring is so small as to be practically nonexistent, then it is *not* a material risk.

Case law in the area of informed consent provides some guidance, but unfortunately there are no cases directly in point. In one case, a court held that whether or not a 1/2,500 risk of perforation of the stomach during an endoscopy procedure was material and should have been disclosed was a question to be decided by the jury.[13] In a 1986 case decided by the Supreme Court of Iowa, which has adopted the patient-oriented standard of disclosure, the court held that a risk of death of no greater than 1/100,000 in connection with an intravenous pyelogram was so remote that *as a matter of law* it did not have to be disclosed.[14].

Thus, the fundamental issues based on present case law are (1) at what point is a risk "material" enough that it should be disclosed; eg, 1/20,000, 1/10,000, 1/5,000?; and, (2) at what point is a risk so remote that no reasonable person possibly could consider it to be material and therefore even a court that is applying the patient-oriented standard of disclosure will hold that the issue cannot go to the jury; eg, 1/25,000, 1/50,000? Until some cases are decided in this gray area (between serious risks of one in several thousand and 1/100,000), it is impossible to predict with any degree of confidence exactly where the lines might be drawn.

In addition, a plaintiff alleging a failure to obtain a proper informed consent must prove either (1) that, had the proper disclosures been made, he would not have undergone the procedure using the contrast agent selected by the radiologist, or (2) he would have undergone the procedure using the preferred agent *and* would not have suffered the injury at issue. Considering the patient's presumed need to undergo the particular diagnostic imaging procedure together with the remote risk of serious injury usually associated with the procedure, it would appear arguable in most cases that a reasonable person in the patient's position would have consented to the performance of the procedure.

As a general proposition, however, it would appear advisable to us to err on the side of caution and disclose the possibility of the risk of death or serious injury unless it is so extremely remote that a court would follow the lead of the Iowa court referred to above, or unless there are *compelling* reasons to resort to a claim of therapeutic privilege (discussed below). In addition, because it is well known that anesthesiologists routinely disclose the remote risk of death or serious injury, it is arguable that radiologists should do the same.

Assuming that it is established by prevailing expert medical opinion that use of a particular agent dramatically lowers the risk of a serious reaction or death in specific situations, it is our view that (1) such agent should be used routinely as a matter of good medical practice, or, alternatively, (2) the patient should be given a choice to pay for it and have it used. If this is done, the chance of a successful claim based on a lack of informed consent would be minimized. We recognize, however, that this approach could involve serious practical problems and raise complex ethical considerations. One group of commentators has criticized this approach for these reasons:[15]

> Some will object to throwing the decision to the patient, for it will favor those patients with a greater ability to pay and discriminate against those with fewer financial resources; some will label this the American way, others, the un-American way. We advise against this option of having the patient decide; we think the question should be answered on grounds other than the individual's ability to pay.

It should be emphasized, moreover, that providing such a choice only would become an advisable option if: (1) prevailing medical opinion has established that the use of a particular agent, which appropriately could be used for the patient in question, significantly would reduce the risk of a serious reaction or death; and (2) there are compelling reasons why it is not being used.

Therapeutic privilege

It seems unreasonable to frighten a patient unnecessarily especially if anxiety could lead to an adverse reaction. We have been told by one expert that in his opinion anxiety could make certain contrast-agent procedures more difficult to perform or complete, and thereby also increase the risk of adverse reactions.

We emphasize, however, that a failure to disclose hazards based on a claim that fully informing the patient might be harmful to the patient's health, entails significant risk on the part of the physician. Claiming such a "therapuetic privilege" not to disclose, places the burden of proof on the physician. In addition, the physician would be required to introduce expert testimony supporting his decision to withhold information. Moreover, the physician's burden undoubtedly is much greater in a state such as Connecticut which has adopted the "patient-oriented" standard for informed consent. In the several cases decided in this area, the physicians have been found to have failed to carry this burden.

It nevertheless seems to us that if there is medical evidence that it is *likely* that full disclosure would be harmful to the patient, *and* the risk is extremely remote in the first place, there might be a better chance of prevailing on a claim of therapeutic privilege and avoiding a conclusion that there had been a failure to inform the patient properly.

We have not located any body of literature supporting the proposition that anxiety caused by informed consent disclosures could significantly increase the chance of adverse reactions in connection with the use of contrast agents. We are aware of Lalli's 1974 article on the subject, but do not agree with his conclusions.[16]

It also should be obvious that the physician's manner is very important in regard to patient anxiety. It often should be possible to inform about remote risks, even the risk of death, without unduly frightening the patient. As indicated, anesthesiologists routinely provide such information.

In any event, we would caution against resort to the therapeutic privilege unless: (1) it is thought to be extremely important not to inform the patient because of a *demonstrable* fear that disclosure would result in harm; (2) the risk, according to recognized studies, is fairly remote; and (3) there either is a body of scientific literature demonstrating, or *expert* opinion to the effect that it is likely that disclosure *is* potentially harmful to the particular patient.

Malpractice: The Standard of Care

We also have some concern about the question of whether it is malpractice not to use a preferred contrast agent—in spite of its cost—if it is readily available.

Interestingly, there has been at least one case reported in which an analogous claim was made that it was negligent not to perform a computerized tomography (CT) (even though the hospital had no CT scanner), but instead to perform a riskier procedure—an arteriogram.[17] The issue was raised as part of a charge to the jury which was held to be defective; there is no further report of what happened in the case.

The practical problem, of course, is balancing the "cost" of bad reactions using a particular agent against the cost to the provider of care of using the preferred agent. As pointed out by Thompson,[18] providers will likely face difficult choices regarding the use of the new agents. If the increased cost of the new media is not recoverable (either from a third-party payer or directly from the patient), its use will be inhibited and patients will be deprived of the apparent benefits. Conversely, the threat of malpractice claims may force providers to use the new agents, especially if the public learns that the agents are apparently safer, etc., but are being withheld from general usage because of the increased costs. If using the preferred agent will cost a provider so much that its use is arguably not practicable, there may be little recourse but to continue to use a non-preferred agent except where use of the preferred agent is strongly indicated or has been chosen by the patient.

If the radiologists sued followed standard prevailing practice in regard to the decision on when to use a preferred contrast agent, one then could argue that the failure to use an alternate agent did not constitute a breach of the applicable standard of care. In this regard, it should be kept in mind that a number of states including Connecticut have held that the standard of care for the particular state is the prevailing national standard of care and not a local standard. Thus, radiologists in such states will be held to the same standard of care as are radiologists at major medical centers.

In any event, a plaintiff-patient would have to establish that the failure to use the alternate contrast agent *caused* the harm. If it could be established that even using the alternate agent would not have avoided the bad result, the patient would not prevail on his claim of malpractice without other evidence of negligence.

In the final analysis we are uneasy about what a jury might do with a case involving death or serious injury because a radiologist did not use an available much-less-risky contrast agent *solely* because of its high cost; common sense suggests that the chance of a plaintiff's verdict would appear fairly high. There would, ot course, have to be a demonstrable significant difference in the risk.

Summary and Conclusions

It is essential for radiologists to keep abreast of developments in regard to the use of contrast agents. At the very least, they should use a highly preferred contrast agent regardless of its cost. Prevailing practice will establish the arguable standard of care, although it is possible that it will be determined in a particular lawsuit that a preferred contrast agent should have been used for the patient, or that the patient should have been given a choice.

It also would appear to be advisable (1) always to obtain informed consent for the use of contrast agents including the advising of patients of the major known risks, and (2) provide patients (who are not identified as being in a group clearly requiring the preferred agent) with a choice whenever a preferred agent is not being used solely because of its cost.

If the radiologist (1) obtains informed consent, (2) properly identifies high risk patients, (3) uses the preferred agents to the extent they are used in leading medical centers, and (4) provides other patients with a choice whenever a preferred agent is not being used because of its cost, it is unlikely in our view that there will be any liability merely for use of the alternate agent.[19] If all of this advice is followed, except providing patients with a choice where an agent is not being used solely because of its cost, the radiologist at least will have a basis for defending against a claim of malpractice; however, he potentially would face liability for a failure to inform properly if it can be established that using the non-preferred agent significantly increased the chance of a serious reaction.

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Geriatric Assessment Methods for Clinical Decision Making

NATIONAL INSTITUTES OF HEALTH

Introduction

The population of elderly persons in the developed nations is growing with extraordinary rapidity. Although the majority enjoy good health, many older people suffer from multiple illnesses and significant disability. Comprehensive assessment methodologies, while not solely applicable to frail elderly persons, are believed to be particularly suited to their situation. These individuals tend to exhibit great typical complexity and vulnerability; have illnesses with atypical and obscure presentations; suffer major cognitive, affective, and functional problems; are especially vulnerable to iatrogenesis; are often socially isolated and economically deprived; and are at high risk for premature or inappropriate institutionalization.

To deal with the exceedingly difficult health care issues posed by frail elderly persons, health professionals need to collect, organize, and use a vast array of clinically relevant information. This process, comprehensive geriatric assessment, is defined as a multidisciplinary evaluation in which the multiple problems of older persons are uncovered, described, and explained, if possible, and in which the resources and strengths of the person are catalogued, need for services assessed, and a coordinated care plan developed to focus interventions on the person's problems.

Comprehensive geriatric assessment generally includes evaluation of the patient in several domains, most commonly the physical, mental, social, economic, functional, and environmental.

The term "functional" is used here in a narrow sense: it means the ability to function in the arena of everyday living. The panel recognizes that the same word has been used in the much broader sense of the whole range of functions we have listed just above. In other words, some use "functional assessment" to mean what we have termed "comprehensive geriatric assessment."

When applied to clinical decision making, comprehensive geriatric assessment involves clinicians from the many health care professions who are necessarily involved in good geriatric care. Comprehensive geriatric assessment is only one component of general geriatric care. Appropriate geriatric care involves some level of assessment of the multiple domains just cited, but comprehensive geriatric assessment tends to be applied only to a subset of older persons who are frail and considered most likely to benefit (see question 3). It has been suggested that a new form of comprehensive assessment could be developed to evaluate physical fitness for purposes of monitoring health promotion and disease prevention in well older persons and another form to guide the humane care of irreversibly disabled and terminally ill older persons.

Between 1973 and 1987, reports have appeared on a significant number of true experiments exploring the elements and effectiveness of various approaches to geriatric assessment. The data from these studies, coupled with the growing numbers of frail elderly individuals, the high cost of their health care, the intensity of their distress and discomfort, and the great uncertainty as to the best route to wise clinical decision making, led to the current conference. The National Institute on Aging and the Office of Medical Applications of Research of the National Institutes of Health, in conjunction with the National Institute of Mental Health, the Veterans Administration, and the Henry J. Kaiser Family Foundation, convened the Consensus Development Conference on Geriatric Assessment Methods for Clinical Decision Making on October 19-21, 1987. After a day and a half of presentations by experts in the field, a consensus panel including methodologists and representatives of medicine, nursing, social work, and the public considered the scientific evidence and developed answers to the following central questions:

1. What are the goals, structure, processes, and elements of geriatric assessment for clinical decision making?

2. What are the comparative merits for different methods in carrying out a geriatric assessment?

3. What is the evidence that a geriatric assessment is effective? If so, in what settings, for whom, and for which outcomes?

4. Insofar as a geriatric assessment is effective, what linkages to clinical management systems are required?

5. What are the priorities for future research in geriatric assessment?

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Comprehensive geriatric assessment has been used for many nonclinical purposes, including research, education, health policy, and administration. This report focuses only on its use for clinical decision making.

1. What are the Goals, Structure, Processes, and Elements of Geriatric Assessment for Clinical Decision Making?

Goals

The goals of comprehensive geriatric assessment are: (1) to improve diagnostic accuracy, (2) to guide the selection of interventions to restore or preserve health, (3) to recommend an optimal environment for care, (4) to predict outcomes, and (5) to monitor clinical change over time.

Structure

Comprehensive geriatric assessment may be done in many institutional settings, including acute care, psychiatric, or rehabilitation hospitals and nursing homes, and in ambulatory settings, including outpatient or freestanding clinics, the offices of primary care physicians, or in the patient's home. It often has been applied to elderly persons at critical transition points in their lives, including actual or threatened decline in health and functional status, impending change in living environment, bereavement, or other unusual stress.

Processes

Comprehensive geriatric assessment is initiated by a referral from one of a number of sources (see question 4). In addition to the patient, the process often includes family members and other important persons in the individual's environment. It is conducted by a core team that consists, at a minimum, of a physician, nurse, and social worker, each with special expertise in caring for older people. Frequently, a psychiatrist is a member of the core team. The specific activities and contributions of each team member may vary considerably, and flexibility in roles may facilitate the assessment process.

The assessment begins with a case-finding approach that utilizes screening instruments and techniques. Based on these initial findings, a more detailed assessment is frequently undertaken. This in-depth assessment often requires the participation of a number of other professions. These may include audiology, clinical psychology, dentistry, nutrition, occupational therapy, optometry, pharmacy, physical therapy, podiatry, speech pathology, and the clergy. Support from other medical disciplines, such as neurology, ophthalmology, orthopedics, psychiatry, surgery, and urology, is commonly needed.

Some aspects of geriatric assessment may be provided by self-rating scales completed by the patient or caregivers. Such information may lead to different insights than those obtained through external assessment performed by a member of the health care team.

Elements

Physical Health

A careful history is obtained from the patient and others with significant knowledge of the patient. Special attention is directed to the use of prescription and nonprescription medications and clues to the presence of malnutrition, falling, incontinence, and immobility. Data are gathered on smoking, exercise, alcohol use, immunization status, and sexual function. Also important is information regarding the patient's personal strengths, values, perceived quality of life, acceptability of interventions, and expected outcomes from his or her health care.

A physical examination is performed with emphasis on identification of specific diseases or conditions for which curative, restorative, palliative, or preventive treatment may be available. Special attention is directed toward visual or hearing impairment, nutritional status, and conditions that may contribute to falling or difficulty in ambulation. Laboratory tests and other diagnostic studies are obtained as indicated.

Mental Health

Cognitive, behavioral, and emotional status are evaluated. Detection of dementia, delirium, and depression is particularly important. A range of assessment instruments is available for these purposes. For some patients a detailed psychiatric interview, a neurobehavior consultation, or comprehensive neuropsychological testing is indicated.

Social and Economic Status

Evaluating the social support network includes identifying present and potential care givers and assessing their competence, willingness to provide care, and acceptability to the older person. This information may be obtained by questionnaires, structured interviews, or other methods. The degree of care giver stress and care giver's support network also are considered.

Areas of special importance to the individual, such as cultural, ethnic, and spiritual values, are noted. The individual's own assessment of the quality of life is recorded. The clinician evaluates the economic resources of the elderly person, which often determine access to medical and personal care and influence options for living arrangements.

Functional Status

There are several components to a comprehensive assessment of an older person's ability to function. Physical functioning usually is measured by the ability to accomplish basic activities of daily living (ADL), including bathing, dressing, toileting, transferring, continence, and feeding.

Other components of functional well-being are behavioral and social activities that require a higher level of cognition and judgment than physical activities. These instrumental activities of daily living (IADL) include preparation of meals, shopping, light housework, financial management, medication management, use of transportation, and use of the telephone.

Functional status (ADL and IADL) is probably most accurately evaluated by direct observation of the patient by family or health professionals in the home or a simulated homelike environment. However, surprisingly accurate information is also obtained by standardized questionnaire or self-report.

Environmental Characteristics

Evaluating the patient's physical environment is essential. Home visits and questionnaires are used to determine the safety, physical barriers, and layout of the home as well as access to services, such as shopping, pharmacy, transportation, and recreation.

Development and Implementation of a Care Plan

Comprehensive geriatric assessment is a dynamic, ongoing process. After the initial assessment, the team generates a comprehensive list of the patient's needs and strengths, usually at a multidisciplinary case conference. Recommendations are integrated into an individualized plan of interventions and desired outcomes. The preferences of the patient and family must be especially carefully considered at this stage in the process. If the assessment takes place in an inpatient facility, treatment and rehabilitation are often initiated in that facility, sometimes directly by members of the team on a specialized unit. In consultative models, the team's recommendations are transmitted to the appropriate primary care providers. Regardless of the site of assessment or the primary responsibility for implementation of the recommended regimen, periodic reassessment and appropriate modification of the care plan are central elements of the process of comprehensive geriatric assessment.

2. What are the Comparative Merits of Different Methods in Carrying Out a Geriatric Assessment?

Many assessment methods for specific domains have undergone rigorous validation, and the criteria for acceptance of a given method have been carefully defined. However, in domains in which there are multiple validated instruments to measure the same function, there have not yet been studies that directly compare one method to another. As a result, identification of the single best instrument in each domain is not possible at this time. One of the first steps in establishing a program of geriatric assessment is deciding upon a standardized approach to data collection. Before choosing from among the different methods, clinicians should consider some of the following issues.

In the context of comprehensive geriatric assessment, there is a role for both structured and unstructured methods of data gathering. There are several merits of a structured approach. Precision, reproducibility, and freedom from bias are enchanced by using standardized validated questions and requiring the respondent to choose from a limited number of answers. The task of data collection is more easily delegated if the format is standardized. Standardized data collection methods help in clinical decision making and prospective evaluation of the efficacy of interventions. On the other hand, merits of unstructured methods include flexibility of the testing procedure, ability to probe problems in detail, and the opportunity for synthesis of findings to develop a global impression.

A number of assessment instruments have been shown individually to have good reliability and validity. A reliable instrument is internally consistent and provides the same evaluation of the patient when used by different raters. A valid instrument measures correctly the domain being investigated. In addition to quantitatively measured validity and reliability, an instrument should have face validity (i.e., on the "face of it" the instrument appears to measure the domain correctly). Although some characteristics of patients who will benefit from a given type of assessment have been identified, there are not validated instruments for predicting benefit.

One approach to developing a comprehensive geriatric assessment program is to select one of several multidimensional instruments designed to address all major domains of geriatric assessment. Alternatively, specific assessment instruments developed for each domain can be combined to accomplish a comprehensive assessment. There is no evidence that either approach is superior to the other.

Desirable characteristics of instruments for case finding are efficiency, simplicity, flexibility for use under a variety of circumstances, and portability. Case-finding requires less sophistication from the examiner than indepth assessment and is relatively inexpensive. There are reliable and valid instruments with which to assess mental function, socioeconomic status, and ADL. Each instrument has a specific range of usefullness. For example, assessment of ADL reliably detects advanced degrees of functional impairment but is quite unlikely to detect minimal departures from normalcy.

In-depth geriatric assessment methods need to have high predictive value, detect small changes in function, identify potentially remediable problems, and efficiently predict patient outcomes. Special expertise is often required to carry out an in-depth assessment.

Three additional issues should be addressed. First, in depth assessments (and consequent interventions) must take patients' values into account. Second, comprehensive assessment methods should accurately reflect change in patient status over time. Most existing methods do not meet this need. Finally, while it is possible to educate a variety of health care professionals to carry out various aspects of comprehensive assessment, experience and leadership are required in the individual or individuals responsible for supervising the assessment effort.

3. What is the Evidence that a Geriatric Assessment is Effective? If so, in What Settings, For Whom, and For Which Outcomes?

Accumulated evidence indicates with moderate-to-high confidence that comprehensive geriatric assessment is effective when coupled with ongoing implementation of the resulting care plan.

The settings in which effectiveness has been convincingly demonstrated are the combined geriatric assessment and rehabilitation unit and the inpatient geriatric assessment unit. There is less consistent evidence regarding the effectiveness of comprehensive geriatric assessment in the home, ambulatory setting, and the hospital inpatient consultation service.

As practiced, comprehensive geriatric assessment has been demonstrated to be effective for a variety of desirable outcomes. Studies to test effectiveness have varied in design from descriptive (before *v* after) to matched control to the most persuasive form, randomized controlled trials.

Outcomes favorably affected by comprehensive geriatric assessment, as demonstrated by randomized controlled trials, have included improved diagnostic accuracy, prolonged survival, reduced annual medical care costs, reduced use of acute hospitals, and reduced nursing home use. These have been most consistently demonstrated. Less consistently reported benefits include increased use of health and social services delivered in the home, reduced medications, and improved placement location, affect and cognition, and functional status. Other outcomes of great importance (eg, quality of life) have not been studied adequately.

Two aspects of comprehensive geriatric assessment appear to be of central importance. The first of these is targeting the process to those persons most likely to benefit, a feature of most successful programs and one strongly endorsed by experienced program leaders. In the inpatient setting, targeting has focused on patients over age 75 and those with potentially reversible disabilities. This target group may account for as much as 10% to 25% of hospitalized elderly patients. Most studies demonstrating effectiveness have excluded groups whom the investigators thought least likely to benefit, notably persons who are fully independent and those with end-stage disease or disability. Several programs have focused on elderly persons at points of transition or instability, as cited under question 1.

The role of targeting in comprehensive geriatric assessment conducted outside the hospital setting is less clear. Certain US studies have failed to demonstrate favorable outcomes in ambulatory settings. This result may be attributable to ineffective targeting. However, two European studies of randomly selected, community-dwelling persons reported efficacy of comprehensive geriatric assesssment without targeting other than for advanced age, suggesting the possibility of expanding the use of these techniques to a broader population in this country.

The second important aspect of comprehensive geriatric assessment appears to be the link between assessment and followup services (also discussed under question 4). Successful programs have been able to assure adoption of treatment recommendations reached during the initial assessment. In some programs, the assessment team has assumed direct control over treatment of the patients, while in others the follow-up has involved active and ongoing consultation and communication with primary care providers. The failure to provide sufficient linkage between assessment and follow-up may provide another explanation for negative results reported in certain studies. In addition, these negative results may be due to an insufficiently comprehensive assessment of intervention (eg, failure to include medical evaluation) or to the use of instruments insensitive to changes that actually may have occurred.

Additional elements of the comprehensive geriatric assessement to which effectiveness has been attributed by developers of successful programs deserve attention. Such elements include focus upon content areas in which geriatric expertise is acknowledged: malnutrition, mental impairment, immobility, iatrogenesis (notably polypharmacy), impaired homeostasis, and incontinence. Furthermore, the effectiveness of the comprehensive geriatric assessment appears to be more than the sum of its parts, perhaps because of the integrative nature of the process and the multidisciplinary discussion that translates the information gathered into a rational plan of care. Finally, it has also been suggested that the effectiveness of comprehensive geriatric assessment is at least partly attributable to the enthusiasm and caring attitude of those who have developed these programs.

4. Insofar as a Geriatric Assessment is Effective, What Linkages to Clinical Management Systems are Required?

Comprehensive geriatric assessment programs should not be viewed as operating independently from other elements of the health care system. Geriatric assessment is a dynamic process responsive to the changes in health status that occur over time. Therefore, a method for assessing effectiveness of interventions over time and for detecting new problems must be provided. A broad approach is needed to ensure that community case-finding identifies the at-risk population and links comprehensive geriatric assessment to subsequent provision of services.

In the absence of a community case-finding program, patients are referred for comprehensive geriatric assessment from a variety of sources, most commonly relatives and community service agencies. Less common sources of referral are the patients themselves, friends, and physicians. Health maintenance organizations and other managed care organizations, as well as nursing homes, may be increasingly important referral sources in the future.

Ongoing monitoring of the implementation of recommendations made during comprehensive geriatric assessment is believed to be central to the success of the care plan. The role of linkages to clinical management systems in the effectiveness of comprehensive geriatric assessment has not been directly tested. However, continuing personal contact of hospital geriatric assessment consultants with the patients and their primary providers does appear to facilitate the implementation of recommendations. Case management as a process to provide linkages is available in many communities, and its role in ensuring follow-up of recommendations requires further investigation. Clearly, the availability of a wide array of social services is a requirement for successful implementation of a comprehensive geriatric care plan.

5. What are the Priorities for Future Research in Geriatric Assessment?

Although past research on comprehensive geriatric assessment has provided much valuable information, many questions remain unanswered. Exisiting studies have demonstrated that effective services can be provided, but these services consist of combinations of activities that have been selected on an empirical basis. Future research can define more carefully which elements of these packages—perhaps all of them—contribute importantly to achieving the observed results. Earlier studies have been site-specific and have incompletely assessed the range of patients who might benefit from these activities. Finally, important measurement problems persist. Thus, key future steps in research include the following:

- Conduct multicenter, randomized controlled trials of comprehensive geriatric assessment, including both academic and nonacademic settings, addressing the above-cited gaps in our knowledge.
- Extend the use of randomized controlled trials of comprehensive geriatric assessment to other outcomes, particularly quality of life, effect on family, and cost-effectiveness.
- Extend the use of randomized controlled trials of comprehensive geriatric assessment to other settings, particularly the home and the nursing home.
- Determine the most effective means for targeting of comprehensive geriatric assessments in a broad patient population.
- Use controlled trials of comprehensive geriatric assessment to evaluate the effect of different combinations of personnel, instruments, and interventions.
- Compare the effects of assessment with and without various methods for coordinated implementation of the care plan.
- Develop new assessment tools for measuring levels of and changes in functional status, particularly for those with mild-to-moderate levels of impairment.
- Directly compare instruments that assess information within the same domain.
- Develop data bases with which to establish patterns of changing function, especially in persons who spend time in long-term care institutions.

Conclusions

The settings, uses, processes, personnel, and component domains of comprehensive geriatric assessment have been defined with sufficient clarity to provide guidelines for establishment of new assessment programs.

Accumulated evidence indicates with moderate-to-high confidence that comprehensive geriatric assessment is effective when coupled with ongoing implementation of the resulting care plan.

Effectiveness has been most convincingly demonstrated in two inpatient settings, the geriatric assessment unit and the combined geriatric assessment-rehabilitation unit.

The most consistently demonstrated favorable outcomes of comprehensive geriatric assessment have been prolonged survival, reduced annual medical care costs, and reduced use of acute hospitals and nursing homes.

Although the evidence allows for alternative interpretation, it is probable that careful selection of patients has contributed importantly to the ability to demonstrate benefit from comprehensive geriatric assessment.

In view of the seemingly indispensable role of monitoring and implementation of the care plan in achieving desired outcomes, ongoing health care should be linked systematically to the process of comprehensive geriatric assessment.

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The conference was sponsored by: National Institute on Aging, T. Franklin Williams, M.D., Director; National Institute of Mental Health, Frank J. Sullivan, Ph.D., Acting Director; Veterans Administration, Thomas K. Turnage, Administrator; Henry J. Kaiser Family Foundation, Alvin R. Tarlov, M.D., President; NIH Office of Medical Applications of Research, William T. Friedewald, M.D., Acting Director.

Elements of Comprehensive Geriatric Assessment

Physical health

A careful history is obtained from the patient and others with significant knowledge of the patient. A physical examination is performed with emphasis on diseases and conditions for which preventive or restorative treatment is available. Special attention is directed to the use of prescription and nonprescription drugs, the presence of malnutrition, visual or hearing impairment, incontinence and immobility, and the risk of falling. Data are gathered on smoking, exercise, alcohol use, immunization status and sexual function. Information about the patient's personal strengths, values, perceived quality of life, acceptability of interventions and expected outcomes from health care is also important.

Mental health

Cognitive, behavioral and emotional status are evaluated with particular emphasis on dementia, delirium and depression.

Social and economic status

Evaluating the social support network includes identifying present and potential caregivers and assessing their competence, willingness to provide care, degree of stress, support network, and their acceptability to the older person. The economic resources of the elderly person are assessed because they often determine access to medical care and influence options for living arrangements. Questionnaires or structured interviews may assist assessment.

Functional status

Physical functioning is usually measured by the patient's ability to accomplish basic activities of daily living (e.g., bathing, dressing). Other components include behavioral and social activities (e.g., preparation of meals, shopping, light housework, medication management). Questionnaires, self-assessment and observation in the home or a simulated environment may be useful.

Environmental characteristics

The safety, physical barriers and layout of the home, as well as access to services (e.g., shopping, pharmacy, recreation) are determined through home visits and questionnaires.

Adapted from a draft of the Consensus Development Conference Statement on Geriatric Assessment Methods for Clinical Decisionmaking, National Institutes of Health.

Lovastatin

DOREEN SCHNEIDER, PHARM.D.

The Framingham study concluded that nonfasting high density lipoprotein (HDL-C) and total cholesterol concentrations are related to the development of coronary heart disease in both men and women aged 49 years or older.[1] The Multiple Risk Factor Intervention Trial (MRFIT) went on to establish the relationship of increased cholesterol concentrations and risk of premature death.[2]

The Lipid Research Clinics trial in 1984 demonstrated the efficacy of cholestyramine in lowering plasma cholesterol concentrations and decreasing the risk of coronary heart disease events.[3]

The 1987 report of the National Cholesterol Education Program recommends total cholesterol screening in patients 20 years of age or older.

Patients with total cholesterol concentrations >200mg/dL <240mg/dL and two risk factors or those patients with total cholesterol >240mg/dL should undergo lipoprotein analysis (Table 1) with treatment decisions based on LDL cholesterol concentrations (Table 2).[4]

Table 1

INITIAL CLASSIFICATION AND RECOMMENDED FOLLOWUP BASED ON TOTAL CHOLESTEROL*

Classification, mg/dL	
<200	Desirable blood cholesterol
200 to 239	Borderline–high blood cholesterol
≥240	High blood cholesterol
Recommended followup	
Total cholesterol, <200mg/dL	Repeat within five years
Total cholesterol, 200-239mg/dL	
Without definite CHD or two other CHD risk factors**	Dietary information and recheck annually
With definite CHD or two other CHD risk factors (one of which can be male sex)	Lipoprotein analysis; further action based on LDL-cholesterol level
Total cholesterol ≥240mg/dL	

* CHD indicates coronary heart disease; LDL, low density lipoprotein.

** risk factors
male sex, hypertension, cigarette smoking, diabetes melletus, severe obesity, and a history of CHD in the patient or of premature CHD in family members

Table 2

CLASSIFICATION AND TREATMENT DECISIONS BASED ON LDL-CHOLESTEROL*

Classification, mg/dL		
<130	Desirable LDL-cholesterol	
130 to 159	Borderline-high-risk LDL-cholesterol	
≥160	High-risk LDL-cholesterol	
	Initiation Level mg/dL	*Minimal Goal, mg/dL*
Dietary treatment		
Without CHD or two other risk factors†	≥160	<160‡
With CHD or two other risk factors†	≥130	<130§
Drug treatment		
Without CHD or two other risk factors†	≥190	<160
With CHD or two other risk factors†	≥160	<130

* LDL indicates low density lipoprotein; CHD, coronary heart disease.

† Patients have a lower initiation level and goal if they are at high risk because they already have definite CHD, or because they have any two of the following risk factors: male sex, family history of premature CHD, cigarette smoking, hypertension, low high density lipoprotein (HDL)-cholesterol, diabetes mellitus, definite cerebrovascular or peripheral vascular disease, or severe obesity.

‡ Roughly equivalent to total cholesterol level of <240 mg/dL‡ or <200 mg/dL.

§ As goals for monitoring dietary treatment.

Antihyperlipidemic drug therapy is inadequate in some patient populations and possesses intolerable adverse effects.[6,27]

The most recently approved antihyperlipidemic agent, lovastatin, may be an alternative or adjunctive agent to current therapy in certain clinical settings.

Pharmacology

Lovastatin (MK 803, mevinolin), is a fungal metabolite of *Aspergillus terreus*.[8] Although the entire mechanism of action has yet to be elucidated, lovastatin has been found to be a potent inhibitor of 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMG CoA reductase), which catalyzes the conversion of HMG-coenzyme A to mevalonate, an early and rate-limiting step in the synthesis of cholesterol.[9,11]

In patients with heterozygous familial hypercholesterolemia (FH), there is evidence to suggest that lovastatin increases low density lipoprotein (LDL) receptors resulting in an increase in fractional catabolic rate of LDL.[9,10,11]

Pharmacokinetics

Thirty percent of an oral dose of lovastatin is absorbed. Because of the extensive first pass effect only 5% reaches the general circulation. Administration of lovastatin with a meal maximizes its absorption. Lovastatin is 95% bound

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to plasma proteins. Peak concentrations occur two to four hours after administration of the dose. Lovastatin is metabolized to two known active metabolites (beta hydroxyacid and 6'-hydroxy derivative) plus two unidentified metabolites. Ten percent of an oral dose is excreted in the urine and 83% in the feces.[12]

Clinical Trials

There are several trials in the literature demonstrating the efficacy of lovastatin in patients with Type II hyperlipoproteinemias.[13-25]

Illingworth and Sexton studied the efficacy of lovastatin in 13 patients with heterozygous familial hypercholesterolemia (FH). They demonstrated a dose dependent reduction of cholesterol, LDL, and triglycerides (17.1-33.3%, 19.8-37.7% and 6.1-34.3% respectively). Lovastatin doses were initiated at 5mg twice daily and sequentially increased to 40mg twice daily four weeks at each dosage. There were no differences in antihyperlipidemic effects between the dosage regimens of 20mg twice daily and 40mg twice daily. No alterations in HDL concentrations were detected.[13]

Havel and associates confirmed Illingworth's results in their six week randomized, placebo controlled, double-blind trial of sequential lovastatin dosing of 5 to 40mg twice a day in 100 patients with FH. However, Havel noted a non-dose dependent increase in HDL (5mg bid/18%, 10mg bid/8%, 20mg bid/12%, and 40mg bid/8%).[14]

Illingworth and associates demonstrated greater antihyperlipidemic effect with the addition of a bile acid sequestering agent (colestipol) to lovastatin therapy. Twelve patients with severe FH were treated with sequential drug therapy—lovastatin alone (20mg bid, or 40mg bid) or in combination with colestipol (10-20gm bid).[10]

Lovastatin 40mg bid/colestipol combination showed a 38% reduction in plasma cholesterol, and a 46% reduction in LDL. Combination therapy also resulted in a smaller reduction in triglycerides (17%) than lovastatin therapy alone (25%). No change in HDL occurred in any phase of the study.[10]

Hoeg and associates designed a double blind, randomized, cross-over, placebo controlled trial of lovastatin in 24 patients, six with FH and 18 with non-heterozygous familial hypercholesterdemia (non-FH) to determine the efficacy of four weeks lovastatin 20mg bid. He noted an overall reduction in plasma cholesterol of 24-29%, LDL 31-34% and increase in HDL of 6-16%.

Variables between the two groups included a higher predrug plasma cholesterol of FH group (307 ± 38) while the non-FH group was 241 ± 12. Although there was a reduction in total plasma cholesterol achieved in both groups, 12 of 18 non-FH concentrations were less than 200mg/dl.[15]

The Lovastatin Study Group II was a five center study involving 101 patients with Type IIa or IIb hypercholesterolemia (non-FH). The patients were randomized into five groups, each group having three different lovastatin regimens or placebo. The regimens employed varied from 5mg bid, to 40mg bid, to 20mg every evening and 40mg every evening. The study demonstrated an overall dose dependent decrease in LDL of 24 to 39% (5mg bid to 40mg bid), while triglycerides decreased by 15 to 27%, and HDL increased 4 to 13%. Some loss of efficacy resulted at higher doses when administered as a single daily dose.[16]

Lovastatin has been utilized successfully in combination with colestipol to treat patients with non-FH[15,17-19] and FH.[9,10] Neomycin[20] or probucol[11,21] in combination with lovastatin has been used to treat patients with FH.

In a retrospective study of 11 patients with non-FH, Hoeg reviewed the efficacy and safety of six drug therapies—neomycin, neomycin/niacin combination, cholestyramine, cholestyramine/neomycin, lovastatin and lovastatin/neomycin combination. All six drug therapies significantly reduced total cholesterol and LDL (24-42%). Three of the six drug therapies (neomycin/niacin combination, cholestyramine and lovastatin) also resulted in a 16-21% rise in HDL.[18]

Two case reports of patients with recurrent FH post liver transplant were treated effectively with lovastatin.[22,23]

Lovastatin was also effective in patients with refractory FH post ileal-exclusion surgery.[24,25]

Adverse Effects

The most frequent (5-10%) adverse effects reported during clinical trials included headaches, diarrhea, flatus, abdominal cramps/pain, constipation, and nausea. Dyspepsias myalgia, heartburn, muscle cramps, dizziness, blurred vision were less frequent (1-5%) and dysgeusea was rarely reported (less than 1%).[12]

Approximately 2% of all patients were discontinued from study because of adverse effects, primarily as a result of increased serum transaminases (30%). Increased serum transaminases were detected, in 1.9% of all patients, after three to 12 months of lovastatin therapy.[12]

Increased creatine phosphokinase concentrations were found in 11% of the patients, 0.5% of the patients developed myositis.[12] Myopathy has been reported in 13 patients who were receiving lovastatin.[28] Norman et al and East et al report rhabdomyolysis in five patients, post cardiac transplant, receiving lovastatin and cyclosporine therapy (one patient also received nicotinic acid). Two of these patients also experienced renal failure—one requiring dialysis.[29,30]

Occular opacities were reported in 45 patients at the baseline examination that were not present at the final examination, while 34 patients were detected as having new opacities, no control group was studied.[12,16]

Drug Interactions

During clinical trials propranolol, digoxin, warfarin, diuretics, calcium channel blockers, and nonsteroidal anti-inflammatory drugs were administered concommitantly with lovastatin, no clinically significant adverse reactions resulted.[12]

Lovastatin had no effect on antipyrine (model for drugs metabolized via the cytochrome P450 system) pharmacokinetics.[12]

Drug Dosage and Administration

The recommended dosage range for lovastatin is 20mg daily to 40mg bid, given with meals.[12] At the higher dosage (greater than 40mg/day) divided doses show increased efficacy.[16]

Baseline liver function tests should be obtained with follow-up tests every four to six weeks and an initial slit lamp ophthalmologic examination performed with a once-a-year follow-up recommended.

Initial and regular follow-up serum creatine phosphokinase levels should be obtained. Discontinuing or withholding lovastatin therapy in patients at risk for rhabdomyolysis should be considered. Lovastatin should be used with caution in transplanted patients receiving immunosuppressive therapy. The patients should be advised to report any signs or symptoms of rhabdomyolysis—muscle pain, tenderness, or weakness.

Cost

Lovastatin (Mevacor®) is available in a 20mg blue hexagonal tablet from Merck, Sharp and Dohme.

Dose	*Cost/Month*
20mg/day	$ 37.50
40mg/day	$ 75.00
80mg/day	$150.00

Conclusions

Lovastatin has proven effective in patients, refractory to prior diet and drug therapy, with heterozygous familial hypercholesterolemia and nonheterozygous familial hypercholesterolemia. Its short term safety appears good; however, its long term safety has yet to be established. Although the cost to the patient will be substantial, if long term safety can be established then lovastatin may prove to have a substantial role in therapy for Type II hyperlipoproteinemias.

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First Case

HENRY SCHNEIDERMAN, M.D.

This is a tale about fear. The fear, irrational and overpowering, that is currently focused on one sexually transmissible viral infection whose name everybody knows, will surely recur with every deadly new disease. And so throughout this piece the menacing new clinical entity is given the generic name of It, for I believe the human issues remain the same even when the disease changes.

Several patients with It had passed through our hospital and a couple had died, but there was yet to be an autopsy of It. Despite membership on the Infection Control Committee and all the scientific papers saying It was hard to catch even after an inadvertent needlestick, I was afraid. I had consulted Barbara Sanchez, the Infection Control Nurse Practitioner. She had never realized, before seeing a regular cancer autopsy on our invitation the day before, that *liters* of infective material are handled every time. Consequently, we were planning the next step, a "dress rehearsal autopsy of It" for the next week.

That morning I called our secretary and asked, "What have we got?" I almost fell over when she answered, "There's a case of It." On the way to the hospital I hoped, "Maybe Jack is pulling my leg by contriving the dreaded scenario," adding, "If not, this is what we are waiting for. Might as well get it over with," as though I believed myself.

Thank goodness it was my week for autopsy service. Jim Stanton would have been scared to death. George Perez would have considered that he had fulfilled the attending pathologist's role by berating the resident through the closed autopsy room door and then imperiously ordering him to be careful as he walked away. Tom Smith, misguided soul, would have thought he remembered reading something in *People* magazine about pancreatic abnormalities in It and would have meticulously dissected the retroperitoneum, nicking himself and forgetting to remove the lungs along the way.

On arriving at the hospital I learned that the case was real, all right. The young man who had died was my age and distressingly similar to me in professional development.

Instead of the losers, I had Jack, who could "dien" (assist at autopsy) better than anybody when he wanted to; and Aram, one of those residents who counter our fears that the next generation is unprofessional. We were joined by Lenny, the medical student who said yes. Harvey, the one who said no, stood duty outside within earshot because we did not have an intercom. Barbara, bless her calm competence and practicality, came and stayed to watch and advise.

In the 40% of my time allotted to internal medicine, I had examined several patients with It and had come to care about some of them personally. As I prepared to direct the assembled team, I was fighting desperation and the fear that It knew an undiscovered route to the unborn baby in my wife's belly.

We cleared the room and prepared ten big buckets of formalin. We suited up for Mars, tenser than we could admit, and Harvey snapped our picture, with Jack's suit marked "NASA: Captain Nikopoulos" by a wag of a histotechnician.

The two ground rules were "Only one person handles a blade at a time" and "Speak before you move." We brought out the body and examined the surface. I changed gloves. Lenny made notes, one sheet about this case and the other recording Barbara's and my comments for the creation of an "It-autopsy" protocol. Aram watched, eager to touch and in good control of himself. Nothing like this had happened during his earlier training in Cleveland, and this first month at our place had been crammed with new challenges. Jack did the primary incision, smooth as silk, all-star, slow and easy, like this was the hundredth time. We made cultures. I yelled "Stop!" when Jack started to eject the extra blood from the syringe, "Drop it into the disinfectant now. Now! Now!" Lenny changed our masks. They completed the evisceration: the organ block was out. Barbara noticed a blood drip and cleaned it up. Rock-and-roll music played on the radio. This time I was not about to cross Jack by shutting that noise off.

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Aram weighed, measured and separated organs into large subunits, doing only a quarter of the usual dissection to minimize the risk of an injury. Each subunit went into fixative, with detailed work reserved for a time after any microbes—the causative agent, the expected enteric protozoans, unsuspected acid-fast bacilli, mounds of cytomegalovirus—would *have* to have died. We changed masks. Lenny wrote down the observations on brain removal. Barbara detailed four more ways we could proceed better, for Lenny's list and for the protocol. Aram changed gloves for the sixth time, Jack for the seventh and I, putatively just an observer, for the third. The last tissue and fluid specimens were taken. We cleaned the body surface yet again and put the body in the tray and then in the bag, and then in the second bag, and then in the third bag for the undertaker, who arrived soon after. A technician, professional and supportive, tried to help by letting him in to the body storage area, and I yelled out for her to detain him, though it meant she would be sore at me.

Finally Aram put the last tissue specimen in a bottle. The knives were soaking in disinfectant, and more disinfectant was dispensed to wipe down everything. We were done. Nobody had gotten cut. We all complimented each other on commitment and integrity. Harvey took a relaxed "After" picture. We changed. We washed—about five times. It was lunchtime. When we got outside, glorious July sunshine filled the outdoors. Each of us was euphoric, and we had become a team in a way I had never, in ten years' exposure, seen before. I took them all out for drinks at the end of the day, wanting to make some gesture. We all felt it. We feel it still.

The shadow of death, of the poor patient's death and of our own deaths, had passed over us, and we were spared, alive, uninfected. We could do it again. We could do anything. It was not going to get us, physically or mentally. We were so ahead of It that we could do right, in this last service, by someone It had struck down. Hosanna.

In a tiny battle of the big war, we had beaten It. There was hope for us and, a long way off, hope that It, too, would be sent cringing into history.

Postscript. Unfortunately for all the victims, we did have to do it again—seven more times in the next seven months. My beloved son Joseph was born healthy, of course, later that year, and is thriving.

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Case 2-1988

Large Lung Opacity in a 52-Year-Old Man With Metastatic Colon Carcinoma

STANLEY G. COOPER, M.D. AND ALAN H. RICHMAN, M.D.

Case History

A 52-year-old man with adenocarcinoma of the colon had had a sigmoid resection one year prior to the current presentation. Hepatic and para-aortic lymph node metastases were demonstrated by computed tomography (CT). Post-operatively, he received chemotherapy and did well until developing jaundice two months prior to this admission. A CT scan demonstrated a mass in the porta hepatis obstructing the biliary tree. Radiation therapy was delivered with little clinical improvement.

The patient was brought to the emergency room on the day of admission in an obtunded state with dyspnea, hypotension, and marked jaundice. A portable supine chest radiograph revealed a 10 cm rounded opacity in the right middle lung zone (Figure 1). The patient expired three hours after admission.

Diagnosis:
Legionella pneumophila pneumonia

At autopsy, acute lobar pneumonia of the right upper lobe was found with foci of pneumonic infiltrate in both lower lobes. There was metastatic adenocarcinoma to the region of the porta hepatis completely obstructing the biliary tree. Extensive hepatic and peripancreatic lymph node metastases were identified.

Discussion

Legionnaires' disease was thrust upon an unsuspecting populace in epidemic proportions in 1976. One hundred eighty of those who attended the National Convention of the American Legion in Philadelphia acquired an acute respiratory illness which was fatal in 29 cases.[1] Since the isolation and identification of the etiologic agent, *Legionella pneumophila,* in 1977, both sporadic and epidemic forms have been described. In epidemic related cases, exposure to air conditioning cooling towers, evaporative condensers, streams, or silt, and attendance at conventions or hotels have been implicated as contributory factors.[2-4] Sporadic cases are predominantly in older males who are heavy smokers or drinkers. They are more likely to have traveled recently or to reside near an excavation or construction site.[5,6] The risk of acquiring Legionnaires' disease is increased in patients with renal failure resulting in dialysis or transplantation, chronic obstructive lung disease, diabetes mellitus, cancer, and cardiovascular disease, and in those treated with immunosuppressive drugs.[6-8] Approximately 75% of all cases occur during the summer months.[3,6]

The clinical spectrum of pulmonary infection with *Legionella pneumophila* may range from mild illness not requiring hospitalization to extensive bilateral pneumonia with fatal respiratory compromise. Typically, pulmonary involvement is manifested by a dry non-productive cough, pleuritic chest pain, dyspnea, and high fever.[9,10] These are non-specific clinical features which may be found with other, more common pneumonias. However, clinical diagnosis may be aided by the presence of associated extra-pulmonary manifestations. Miller[10] described a tetrad of clinical findings which, in the presence of any three within 24 hours of admission, are "strongly suggestive of Legionnaires' disease." These include: 1) prodromal toxic illness with fever greater than 39°C for four days; 2) confusion, diarrhea, or nonproductive cough; 3) lymphopenia less than 1,000/mm^3 if the total leukocyte count is less than 15,000/mm^3; and 4) hyponatremia less than 130 mmol/L. Additional signs and symptoms which may help distinguish *Legionella* infection are recurrent chills, myalgias, relative bradycardia, microscopic hematuria, liver function abnormalities, hypoalbuminemia, toxic encephalopathy, and unexplained impairment of consciousness.[3,9,10] Watts et al[11] presented a case of fatal *Legionella pneumophila* infection and documented bacterial antigen in liver and

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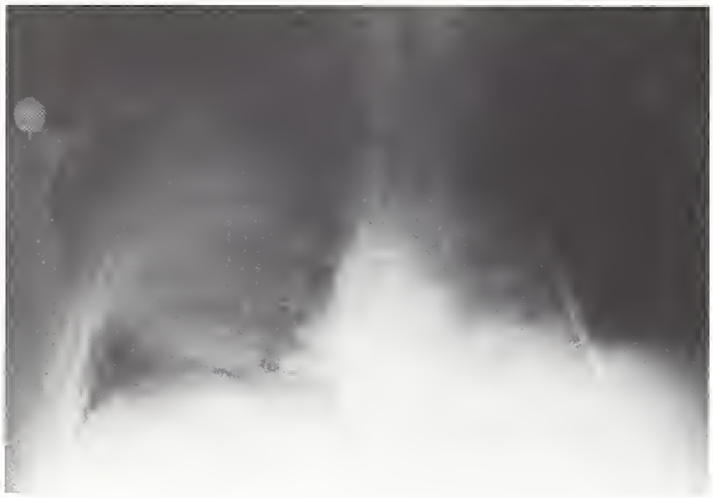

Figure 1
Chest radiograph obtained on admission.

spleen, as well as in lung parenchyma and mediastinal lymph nodes.

The radiographic hallmark of Legionnaires' disease is air-space consolidation with rapid progression to involve other areas of both lungs.[12-14] The initial chest radiograph at the time of presentation may have a wide variety of appearances. Fairbank et al[14] reviewed 70 cases from a 1980 epidemic and found air-space consolidation in a lobar or segmental pattern in 36%, a diffuse patchy distribution in 36%, and poorly marginated, rounded opacities in 34%. Smaller groups had perihilar, peripheral, or diffuse homogeneous infiltration. Evaluation of the peak chest radiographs (showing the most advanced radiographic disease) revealed lobar or segmental consolidation in 56%, diffuse patchy infiltrates in 25%, and poorly-marginated rounded opacities in 25%. All patients developed some parenchymal consolidation and more than half also had pleural effusions. Of the 24 cases reviewed by Dietrich et al[12], 68% had unilateral findings at presentation, whereas 65% had bilateral involvement at the peak of radiographic abnormality (average of ten days after presentation).

The chest radiograph of our patient is somewhat unusual in that it represents a large, rather well defined, mass-like consolidation. Round pneumonia is a well known entity in pediatric patients which masquerades as a parenchymal or mediastinal mass and is often referred to as a "pseudotumor".[15,16] Carter et al[17] described a patient with discrete nodular densities on a chest radiograph resembling metastatic neoplasia. Percutaneous transthoracic aspiration biopsy revealed fibrinopurulent debris with numerous *Legionella pneumophila* bacilli. In our patient, a metastatic lesion was considered to be most likely since there was evidence of metastatic disease elsewhere. The presentation of this case reminds us that when a new roentgenographic finding develops in a patient with a known disease one ought not reflexively equate the two and make a presumptive diagnosis without consideration of other etiologies.

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Tissue-Type Plasminogen Activator for Acute Coronary Thrombosis

THE MEDICAL LETTER

Recombinant tissue-type plasminogen activator (rt-PA or TPA), a commercial formulation of a naturally occurring thrombolytic enzyme (*Activase*—Genentech), is now available in the USA for treatment of coronary artery thrombosis associated with acute myocardial infarction. Two thrombolytic enzymes previously available for this indication, urokinase (*Abbokinase*) and streptokinase (*Streptase; KabiKinase*), can be given intravenously or, after cardiac catheterization, directly into the thrombosed coronary artery. TPA, also known generically as alteplase, is recommended for intravenous (IV) use only.

MECHANISM OF ACTION—Thrombotic coronary artery occlusion has been demonstrated in more than 80% of patients with acute transmural myocardial infarction examined within six hours after onset of symptoms. Urokinase, streptokinase, and TPA all promote conversion of plasminogen to plasmin, which is fibrinolytic; prompt intracoronary or IV administration of a fibrinolytic agent can restore perfusion in occluded coronary arteries. Compared to urokinase or streptokinase, TPA converts to plasmin relatively more fibrin-bound plasminogen and relatively less from the systemic circulation (AJ Tiefenbrunn et al, *Circulation,* 71:110, 1985).

PHARMACOKINETICS—The new drug has a half-life of about five minutes, compared to about 16 minutes for urokinase and 23 minutes for streptokinase. TPA is metabolized in the liver and excreted in urine; within ten minutes after administration, about 80% of a dose has been cleared from the blood.

CLINICAL TRIALS VERSUS IV STREPTOKINASE—A multicenter double-blind trial in patients with total coronary artery occlusion compared TPA with IV streptokinase; treatment began an average of 4.8 hours after onset of chest pain. Ninety minutes after starting treatment, 70 (62%) of 113 patients who received TPA had adequate coronary perfusion, compared to 37 (31%) of 119 treated with streptokinase. Reocclusion occurred after treatment in 15 (24%) of 62 patients successfully treated with TPA and restudied before discharge, compared to 4 (14%) of 29 with streptokinase. Within 21 days after treatment, 11 deaths (7%) occurred among 157 patients assigned to TPA, and ten deaths (6%) among 159 patients assigned to streptokinase. With either drug, the most beneficial effect on left ventricular function occurred in patients with anterior infarction treated less than four hours after onset of symptoms (TIMI Study Group, *N Engl J Med,* 312:932, 1985; JH Chesebro et al, *Circulation,* 76:142, July 1987; FH Sheehan et al, *Circulation,* 75:817, 1987).

A single-blind multicenter trial in patients with myocardial infarction found that the infarct-related artery was patent in 43 (70%) of 61 patients 75 to 90 minutes after starting treatment with TPA and in 34 (55%) of 62 patients treated with IV streptokinase (M Verstraete et al, *Lancet,* 1:842, 1985). In this trial, the average time from initial chest pain to administration of the thrombolytic agent was less than three hours; other data indicate that streptokinase in particular loses effectiveness when given more than three hours after onset of symptoms (MW Rich, *Am Heart J,* 114:1259, Nov 1987).

CHANGE IN FORMULATION—For both multicenter trials comparing TPA with IV streptokinase, the TPA was produced on a small scale as a double-stranded molecule. The formulation now approved for marketing is predominantly single-chain; it requires more rapid infusion to achieve the same thrombolytic effect (HD Garabedian et al, *J Am Coll Cardiol,* 9:599, 1987). Studies comparing single-stranded TPA with placebo for IV treatment of coronary thrombosis indicate that the new formulation is also effective (EJ Topol et al, *J Am Coll Cardiol,* 9:1205, 1987; I-K Jang et al, *J Am Coll Cardiol,* 8:1455, 1986).

MORTALITY—A one-month followup of patients with myocardial infarction in one controlled trial found two deaths (2.5%) among 79 patients treated with IV streptokinase within four hours after onset of chest pain, compared to 12 deaths (12.9%) among 93 patients given placebo (HD White et al, *N Engl J Med,* 317:850, Oct 1, 1987). A six-month followup found 12 deaths (8.4%) among 143 patients treated with TPA, compared to 16 deaths (10.9%) among 147 patients treated with IV streptokinase (T Schreiber, *Am J Med,* 83 Suppl 2A:20, Aug 24, 1987). A one-year followup of patients with myocardial infarction treated with IV streptokinase found that 1,005

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(17.2%) of 5,851 patients had died, compared to 1,113 deaths (19%) among 5,846 patients not given thrombolytic therapy (GISSI, *Lancet,* 2:871, Oct 17, 1987).

CLINICAL TRIAL VERSUS IV UROKINASE—A single-blind randomized multicenter trial in patients with ECG-diagnosed acute myocardial infarction and less than six hours of chest pain compared a 70-mg total dose of single-stranded TPA with three million units of urokinase. Angiography 90 minutes after starting treatment found the infarct-related artery patient in 84 (69%) of 121 patients treated with TPA and 77 (66%) of 117 patients treated with urokinase. At 24 hours, reocclusion was found in six (10.5%) of 57 infarct-related arteries in the TPA group and in one (1.6%) of 63 patients treated with urokinase. Five cardiac deaths occurred in each group, and one patient treated with TPA had a fatal intracranial hemorrhage (KL Neuhaus et al, *Eur Heart J,* 8 Abs Suppl 2:49, Sept 1987). Urokinase has been approved for intracoronary but not for intravenous treatment of coronary artery thrombosis by the US Food and Drug Administration.

ADVERSE EFFECTS—Hematomas at the catheterization site have been reported in as many as 43% of patients treated with TPA; catheterization is not necessary for administration of TPA, but was usually required in the experimental protocols used to evaluate the drug. Serious bleeding has occurred; one study found that 70 (18%) of 386 patients treated with TPA required blood transfusions (EJ Topol et al, *N Engl J Med,* 317:581, Sept 3, 1987). In clinical trials, the incidence of gastrointestinal bleeding with TPA (5% to 10%) was similar to the incidence with streptokinase or urokinase. The incidence of intracranial hemorrhage, according to the manufacturer, was 0.4% in 3,272 patients treated with 100 mg of TPA and 1.3% in 1,779 patients treated with 150 mg. One recent report suggested that TPA may activate the complement system and therefore might extend tissue necrosis in myocardial infarction (WB Bennett et al, *J Am Coll Cardiol,* 10:627, Sept, 1987). Serious allergic reactions to TPA have not been reported; streptokinase can cause anaphylaxis. All thrombolytic agents can cause cardiac arrhythmias with reperfusion.

HEPARIN—Heparin has generally been given with TPA to maintain the patency of catheters and prevent reocclusion of coronary arteries. How much it has contributed to the effectiveness of TPA, or to the risk of bleeding, is unknown. The labeling for TPA mentions heparin but does not make any recommendation concerning its use, except to say that it should be discontinued if serious bleeding occurs.

CONTRAINDICATIONS—Of 403 patients with suspected myocardial infarction in one study, only 56 (14%) were considered eligible for thrombolytic therapy; the others had atypical symptoms, had pain for more than six hours, did not have appropriate ECG changes, or had a history of peptic ulcer, early-onset, insulin-dependent diabetes, or various other disorders that were considered contraindications (N Murray et al, *Br Heart J,* 57:144, 1987). Current labeling for the drug, which is less restrictive, lists as contraindications active internal bleeding, history of cerebrovascular accident, recent (within two months) intracranial or intraspinal surgery or trauma, intracranial neoplasm, arteriovenous malformation or aneurysm, known bleeding diathesis, or severe uncontrolled hypertension. The manufacturer also lists many other conditions that may increase the risks of thrombolytic therapy with TPA, including old age (more than 75 years).

DOSAGE—The manufacturer recommends a total dose of 100 mg of *Activase* over three hours. Sixty mg is given in the first hour, with 6 to 10 mg as an initial bolus (over one to two minutes), and the rest infused slowly over the rest of the hour. Twenty mg should be infused slowly in the second hour, and 20 mg more in the third hour. For patients weighing less than 65 kg, the total dose should be decreased to 1.25 mg/kg. The manufacturer warns against a total dose of 150 mg, which was used in some trials, because of the increased risk of intracranial bleeding.

COST—One dose (100 mg) of *Activase* purchased directly from the manufacturer costs $2,332. The cost of one dose (1,500,000 IU) of *Streptase* is $186.48, according to *Drug Topics Red Book,* 1987.

CONCLUSION—TPA given with heparin to patients with indwelling coronary catheters appears to be more effective than intravenous streptokinase, but not necessarily safer, for treatment of coronary artery thrombosis. Some *Medical Letter* consultants believe that streptokinase given less than three hours after onset of symptoms may be equally effective. TPA without coronary catheterization and possibly without heparin could prove to be safer, but its effectiveness without heparin is unknown.

View from the Hill

JAMES E. BRYAN

In an editorial in *The New England Journal of Medicine* for September 10, 1987, Dr. Arnold S. Relman points to the ironic circumstance that the American health care system is in many respects "remarkable"—leading the world in technical sophistication, in public investment and in the excellence of our research, educational institutions and hospitals—while at the same time, there is, nevertheless, "almost universal dissatisfaction with the way the system is working."

A litany of issues serves as current sources of unhappiness. Among these issues are outsized and growing national costs, reflected in the excessive cost of industrial production, and in oppressive cost-sharing for insured, aged, poor and disadvantaged people, as well as inadequate evaluation of quality of service. Also included is inadequate protection for the uninsured, underinsured and even the insured against catastrophic consequences of long-term hospital or nursing-home care. Amidst this confusion, hospitals and physicians alike struggle to survive in a hostile competitive atmosphere, troubled by commercial forces threatening their professional ethics and performance standards, as well as their incomes and their ability to treat patients as they deem best.

All of these factors serve as the basis for Dr. Relman's suggestion: "The time has clearly come to take a hard look at our health care system and decide on the changes necessary to make it more responsive to our people's needs." As an early response to this need, Dr. Relman mentions the AMA's recent "Health Policy Agenda for the American People," a 195-point program developed by a broad alliance representing private and public interests, and convened under the AMA in an effort that, he says, "generated little popular interest."

The Agenda, says Dr. Relman, "addressed many of the health care system's problems and offered useful suggestions," but perhaps "the large number and variety of recommendations diffused its impact. . . it seemed to skirt some of the most important and nettlesome issues." Dr. Relman further observes that while other private organizations have occasionally "offered prescriptions for improving the health care system. . . all have been similarly unsuccessful in attracting attention from the public or government policymakers."

At this point, "a new and promising private project" is introduced: "The National Leadership Commission on Health Care." The Commission is comprised of influential and knowledgeable private citizens, and headed by all three living former Presidents of the United States, who serve as honorary co-chairpersons. Former Congressman Paul G. Rogers and the honorable Robert D. Ray, LL.B., are listed as co-chairpersons, and Henry E. Simmons, M.D., M.P.H., president, is assisted by Margaret M. Rhoades as executive director.

The Commission membership comprises almost everyone who has ever appeared on the speaking roster of any prestigious conference on our health care system (33 in all), supplemented by an "advisory group" of some 20 other persons of varying talents and enviable reputations.

My concern is the perhaps remote prospect that such an elite and variously interested corps of counselors will find common ground in treating so complex and agitated a social concern as America's health care "system," given the fate of previous efforts of this genre.

In general comment, I submit that many patients (and, I hope, more than a few doctors), perceive that what we have devised in the nature of a health service falls far short of a "system." It begins with the strangely inverted hierarchic structure of the medical establishment, which—standing on its head—relegates a small but centrally vital corps of generalists beneath an inchoate mélange of miscellaneous specialists, in precise obversion to the range and nature of the medical problems presented. One of the main barriers impeding prompt access to appropriate and efficiently economic care is precisely this structural anomaly, which afflicts people vainly seeking primary care from a generalist who accepts a management role. This causes some patients to enter the system by a side door, falling into the hands of specialists who can help them only by further referral.

We might well consider the uses—and the irrelevancies—of the term "health care." Too often this term is used as though it properly embraces all three major elements of a

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comprehensive individual or community health program: (1) the role of the physician; (2) the achievement and maintenance of a healthful, wholesome environment, and (3) a balanced lifestyle (including access to good medical care).

If one accepts these premises, it follows that the ultimate public health program will possibly be shaped as actively and persuasively by the people (through some sort of broad consensus of patients), if such is conceivable, as by the AMA 195-point Agenda, or by the all-star National Leadership Commission on Health Care comprising over 50 medical eminences and three past Presidents of the United States.

Dr. Anne Somers, one of American medicine's wisest nonphysician counselors, has suggested that "the overall goals of medical care in the United States are (or should be) to enable the people to stay healthy and independent as long as possible, to provide access to good preventive, short-term, recuperative and rehabilitative services as needed, to good long-term care for the management of serious chronic disease and disability, and to good supportive services when disease is terminal; to encourage as much patient autonomy and responsibility as possible, with care provided in the least restricted and most cost-effective and appropriate environment and with continuity of management and records; and to encourage professional, educational, research and financial activities and institutions essential to the above."

Surely, this is an order worthy of a leadership commission on health care, and inclusion on a health policy agenda that offers an active, meaningful role not only to the profession but to the people for whose benefit the whole enterprise is proposed.

BOOK REVIEW

Becoming a Doctor- a Journey of Initiation in Medical School

By Melvin Konner, M.D., New York, Elisabeth Sifton Books - Viking Penguin, Inc., 1987. 390 pp. $19.95.

Melvin Konner's keen powers of observation as an anthropologist and as a highly regarded author, his obvious sensitivity for other human beings, and his notable experiences at two major universities, should alert all who read *Becoming a Doctor* to regard his comments with seriousness and I might add, with great concern. If there is a persistent theme that this reviewer finds throughout the book, it is the recurring and disturbing reference to the lack of proper role models for a group of young, impressionable, idealistic, intellectually deserving, energetic, well motivated, and enthusiastic novices during the important period of their transition into the medical profession.

Teachers at medical schools, attending physicians, and those house staff working with students should look carefully at themselves after reading this book. Are they like the "professor who stands on a platform from which he can influence the emotional response systems and the ethics of scores of future physicians," making crude and inappropriate remarks about patients? Because of his previous training, Konner is particularly concerned with the lack of physician sensitivity to psychiatric and social problems of patients: "Humane acts not directly affecting care. . .are in short supply in the hospital world." The author seems to have a difficult time finding a few redeeming exceptions to these observations: ". . .little did I realize with what longing I would later look back on Dr. Weinberger's simple human decency," and "he did not seem as thick-skinned as some of the others, and I worried for him." The hypocritical concerns of many—the teacher preaching one approach and obviously practicing another—is this, Konner seems to be asking, what we wish to expose students to during the most vulnerable period of their training? Is the system "turning off" students? What will be the effects of this experience upon professional practices in later life?

Many physicians, perhaps assuming a defensive posture, will be indifferent or even antagonistic to the criticisms of a person they perceive of as an alien within their ranks, one who did not practice medicine after graduation. Others, however, with some soul-searching, will probably admit that this book contains many truths and will react in a positive and constructive way.

The author deserves considerable credit for weaving together familiar experiences common to all physicians with important ideas and issues targeted towards those assuming one of the professions most important tasks and responsibilities—teaching the young. In getting his message across, Konner is not beyond tweaking the tail of the lion; we hope there is someone listening to the resultant roar.

Becoming a Doctor is more than just a well written series of anecdotal events supplemented by a glossary of house officer's slang. If this were the case, the book would be no different from numerous others about medical students, interns, etc. What makes this presentation different and of value, however, is the agenda it carries that almost certainly demands a response. For this, the author is to be commended and is deserving of praise.

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Editorials

Epilepsy and the Law

Laws dealing with persons suffering from epilepsy have frequently been a problem, as noted in "Driving and Epilepsy" by Arthur M. Seigel, M.D., in this month's issue of *Connecticut Medicine.* Legislation designed to protect the public from drivers with seizures may be medically unsound and grossly unfair. Connecticut's law has been criticized because it requires a physician to report his patient to the State Department of Health, which then reports the case to the Department of Motor Vehicles. Dr. Seigel notes that such reporting is the patient's responsibility in a majority of states.

The question of which person with a seizure disorder is safe to drive a car and which one is not is the heart of the problem. Dr. Seigel does not attempt to answer the question directly but notes a number of related facts. The facts need close examination. He points out that drivers with epilepsy have a higher accident rate than non-epileptics by a ratio of approximately two to one. He then reports that epileptic women have fewer accidents than non-epileptic men but fails to add the fact that non-epileptic women also have fewer accidents than non-epileptic men. He sites a study from the Netherlands that found that 80% of accidents due to seizures were single vehicle accidents, and 80% occurred outside of "built-up areas." A fatal accident is just as fatal whether it occurs in town or country and whether it involves only one vehicle or many. I am reminded of a 70-year-old clergyman I treated for a minor head injury. He had a mild idiopathic seizure disorder and his physician prescribed diphenylhydantoin. The clergyman felt it was unnecessary and discontinued the medication. While driving one evening, he had a seizure and ran his car off the road. His wife was killed instantly. He received only a mild concussion and was released the next morning.

There are many paradoxes regarding epilepsy and the law. A person with epilepsy cannot be licensed to pilot a private plane or a commercial airliner (where there is always another pilot present). He may be licensed to operate a heavy truck, however, on a highway frequented by buses carrying school children. An epileptic may do brain surgery but may be ineligible to serve as a fireman in some states.

Dr. Seigel makes an important point when he concludes that it is time for the Connecticut law regarding driving and epilepsy to be reviewed. This is particularly true when one considers the remarkable improvements that have been made in the diagnosis and treatment of seizure disorders during the past 10 years. This is not to imply that the law should be liberalized in the sense of taking greater risks at the expense of the motoring public. Under current law a physician failing to report a patient may be subject not only to state penalties but also civil suit by persons injured by his patient while driving. It is time that the part of the law requiring physicians to act as agent informers against their patients be dropped and Connecticut brought into line with the majority of other states.

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Make the Schools Smoke-Free

The Centers for Disease Control have reported that the prevalence of smoking has declined to an all-time low of 26.5% among adults in the United States. (MMWR 1987; Vol. 36, No. 35, Is. 32, 29). This compares with 36.7% ten years ago, and almost 42% twenty years ago. For all who have worked to achieve this progress, this must be considered a major accomplishment, especially when we recall that there are approximately 1,000 deaths each day in the United States that result from diseases either caused by or associated with tobacco smoking.

A visit to one of our public high schools, however, would provide evidence that the battle is not over, especially among the under-18 group who are perhaps the most susceptible to peer pressure.

The rest rooms are gray with smoke; there are smokers all over the place, and no one seems to notice.

More and more public places, work places, and hospitals are smoke-free. Naively we might imagine public schools to be the easiest settings in which to prohibit smoking. Yet school officials seem to tread most cautiously in this matter where, from a public health standpoint, there is no debate.

It is always easy to tell others how to conduct their business, and often unwise. However, doctors are parents and citizens too; we should be campaigning with our sometimes timid local school boards to make all school property and buildings totally smoke-free. Health education is a part of education reform; in smoking, and in other forms of substance abuse, example is often a more effective teacher than facts and figures; rules to emphasize our convictions, used sparingly but firmly, are convincing examples.

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The President's Page

Medical Articles

I'm sure that many of you follow a routine every morning—almost everyone has one. Mine is to go to the hospital and "round" before going to the office. On the way to the hospital, I stop at the local newsstand and pick up the morning papers which I hope to read at breakfast. As many of you with office practices know, it has become almost a necessity at least to scan the morning papers before going to the office, for there are articles on medicine that you'll be querried on almost as soon as you arrive.

I routinely pick up *The New York Times, The Wall Street Journal*, the local daily, and a lesser known daily which usually contains information relating to the insurance industry. Before rounding, I usually stop by the cafeteria for coffee with what I call the "floating coffee klatch gang"—physicians and other members of the hospital family who come and go. Sooner or later, our discussions focus on the front pages of *The Times* and *The Journal*, for they usually have something that has to do with medicine—whether it be Medicare, Medicaid, medical legislation, doctors, malpractice, HMOs, PPOs, new products and/or procedures, etc. There seems to be something almost every day, and the question is routinely asked as to how the article is slanted.

Just imagine picking up *The Times* and seeing the headline: "Overstaying by Patients Cuts Beds—Aggravates Shortage in Pressed Hospitals." One may assume the reader would conclude that those patients are taken care of by doctors, and that it is the doctors who are keeping the patients in too long. The opening paragraph states that the patients are "medically ready for discharge and do not belong there." This conclusion is ascribed to "government and health-care officials" who have made those medical decisions. As to the "shortage," they say nothing of how governmental policies have been directed towards *creating* shortages which result in heart attack patients having to stay in emergency rooms for up to four days before being able to get a room; and for failure to take care of the sick, frail, and the elderly by disallowing "after the fact" admissions. It is sickening to read of patients referred to as "inappropriate," or of "significant financial disincentives" for hospitals to allow the sick to remain in their institutions. Non-medical controllers of medical care, as well as a seemingly increasing number of physicians, seem to look upon the sick as commodities to be acquired and disposed of based upon how much they cost. And even if the sick are able to be sent to seemingly less expensive home care, the people caring for them are frequently not the trained personnel that the frail and sick elderly need for that home care. A recent article in *The New York Times* indicates that many unemployed from recently lost, unskilled, manufacturing jobs were being directed to the home care field. So much for quality assurance.

Another *Times* article headline states: "AMA Rules that Doctors Are Obligated to Treat AIDS." Most readers, looking at that would conclude that doctors are trying to get out of taking care of AIDS patients. Aside from the fact that the AMA rules no one and represents less than one-half of the nation's physicians, that headline could lead one to mutter that the AMA has to "control" all those doctors who won't take care of AIDS patients. Actually, many physicians are turning over the care of their AIDS-diagnosed patients to the experts in the field, primarily infectious disease specialists who can keep up with the latest developments in this rapidly changing field. That is good—and compassionate—care! Unfortunately, the reason why the AMA came out with the position paper is that there are many instances of hospital personnel who refuse to care and expose themselves to AIDS, out of concern for themselves and their families. Their decisions may or may not be founded in fear, but must be respected, as we respect those who for a variety of reasons refuse to participate in abortions. These are problems that will have to be addressed. One had only recently to watch CBS-TV's "60 Minutes" to see what contracting AIDS did to a hospital employee and his family. One hospital administrator recently asked me in front of a large group what the state medical society was going to do about "those doctors" who refused to take care of AIDS patients. I noted that I knew of no instances of physicians who did not see that their AIDS patients were taken care of, and that it was my opinion that it was more of a hospital problem. But the media does not focus on hospital employees, only on MDs.

The Wall Street Journal headlines: "Physicians' Carelessness with Pap Tests Is Cited in Procedure's High Failure Rate." The average reader of this financial paper will probably highlight "carelessness" and think that if *The Journal* says it, it must be true. That headline really is misleading. In the body of the article, the real problem is finally mentioned: that the Pap test is really only a screening, rather than a diagnostic procedure, and that the 20% to 40% rate of failure to detect cervical cancer or precursor-cell abnormalities rests with the laboratories that interpret the screening tests. Yet the physicians who obtain the smears are described as "careless" and, in some cases, "ignorant." Other health-care professionals, including nurses practitioners, are indicted. If one reads further, one finds that the whole article is probably a "turf" issue since no other than an official of American College of Obstetrics and Gynecology is described as making the statements.

Then there is the article on "Doctors Facing Peer Reviews of Testimony." This article states that ". . .one doctor may not be telling the truth." It does not indicate that there may be an honest difference of opinion. It gives the impression that the doctor is lying. Also, the *Journal's* article about the Florida malpractice lawyer who takes 40% of each award (not including expenses), and actually admits to sometimes splitting some money with other attorneys, has labelled us as "bastards" he "enjoys suing. . . ."

And finally there is Mr. Nader's representative, Dr. Wolfe, whose statements are headlined as follows: "Medicare Panels Accused of Laxity. . .Statistics Show that Physicians Fail to Police their Peers." Laxity! Police! No other profession has been so subjected to so much scrutiny and policing as medicine. Wolfe seems to feel that physicians are not serious about making sure that Medicare patients receive good care. I wonder how many of you returning to the hospital for evening rounds are doing it because you want to add another hour or two, or more, to your working day. Extrapolating Wolfe's thoughts could lead one to the conclusion that Medicare patients will only receive good care if their doctors are penalized. Maybe medical critics should be penalized for laxity. Wolfe is quoted as saying that there were 660,601 doctors on the Medicare rolls as of 1 January 1987. Most figures I have seen indicate that there are fewer than 600,000 physicians in the United States. It is hard to believe that each one of them participate in Medicare. If Wolfe were diligent enough, he would find that there may be a large number of retired, deceased, and double-entried physicians in his numbers.

All in all, the headlines cited illustrate how medicine is constantly being portrayed in less than a rosy light. There is no doubt that medicine is not as perfect as its detractors, but it has never claimed to be. Medicine is an art as well as a science. Because physicians don't bat 1,000, it doesn't mean that the overwhelming majority of our profession is not trying to attain that goal. Let's take exception to these overtly inaccurate or overly slanted articles. For the big lie, if it is repeated frequently and loudly enough, will become fact. Take time, read your papers, be informed of what's going on, write your paper's editor. Speak up and educate your public, your patients, your friends! It's *your* profession—and livelihood—that's under attack.

James P. Orphanos, M.D.
President

Reflections on Medicine

Would You Choose Another Decade?

ROBERT U. MASSEY, M.D.

Students applying to medical school are a good group to learn from; they tell us what the educated public is thinking about medicine. To be sure they are on their guard during an interview, but that barrier can be partly set aside, especially if they are self-confident, and most are. They have thought long and hard about medicine, have talked with parents, counselors, and friends, and often with physicians during some illness or injury of their own, or more often an illness in the family. Last month I mentioned one of their concerns: their perception that we are turning medicine from a learned profession to a commercial enterprise.

Another issue which frequently comes up is medical technology. They are not always sure what they mean by this; for some it is the potential for genetic manipulation; for others it is the worry over prolonging life without regard for the patient's wishes, or the family's. Many have read about how technology has dehumanized care, put a barrier between doctor and patient, or increased costs without much benefit. For most, medical technology is somehow seen as a malign influence on what should be a simple nurturing relationship. I tell them about a colleague who once remarked, "If I had pneumococcal pneumonia, I'd rather someone give me a million units of penicillin than hold my hand." They forget that antibiotics, vaccines, hormones, and blood transfusions are examples of medical technology, more important but less spectacular than heart transplants.

What they have in mind, of course, are the complex and elegant machines and procedures, *in vitro* fertilizations, fetal brain-cell transplants, and most of all, the respirators and pacemakers that keep bodies alive when brains are dead or almost certain to die, the "half-way technologies" that Lewis Thomas described so well over a decade ago. They also have visions of technocratic doctors and nurses more concerned with managing machines than patients.

We hear the same things at cocktail parties from our non-medical friends who frequently have mixed feelings, chiding us for our captivation by technology and then talking with approval about the latest wonder reported in the *New York Times,* wondering if it would help them. It is often our colleagues in the non-science departments of the university who are most critical, even hostile toward what they see as medicine's obsession with things rather than people. I suspect some of that rubbed off on our medical school applicants.

During a conversation among a group of businessmen, lawyers, physicians, and academicians on this very subject, modern technology, especially medical technology, one of them, an historian, asked, "Which one of you would voluntarily choose to live in another century, even another decade?"

The talk had been politely critical, especially of medicine, and one of them asked if he could choose his place and social class, then elected late eighteenth-century England, upper class.

Someone reminded him, "No penicillin, no anesthesia, no vaccines, and plenty of smallpox."

He withdrew his selection. By then everyone had decided to stay in the 1980s, not because of jet travel, computers, or compact discs, but mostly because of everything that was available in their local hospitals.

The implied conclusion here is, of course, far too simple, and our student medical school applicants are right to be concerned about a medical profession relying heavily upon technology, especially half-way technologies, and neglecting either prevention of disease or the personal care of patients. Francis Peabody reminded us of that in his classic paper 60 years ago. Lewis Thomas urged us not to linger over the seductive half-way technolgies, but to push on for the high technologies of medicine, the preventive immunizations and the cures that follow from basic and clinical research.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

SANCTIONS DON'T MEASURE "SUCCESS"

To the Editor of the *New Haven Register:* Your editorial categorically claiming that not one physician has been penalized by the Peer Review Organization in Connecticut must have come as a surprise to the practicing physicians of this state who have been monitored by CPRO for the past three years and who would probably not concur with your impression of the benign nature of the review process.

Mandated by law, the Medicare peer review process is both extensive and all encompassing. It includes review of the appropriateness and quality of the care given to Medicare beneficiaries.

In order to perform its required tasks, the peer review organization is structured in accordance with requirements mandated by federal regulations. Its performance is highly professional and it is evaluated by multiple layers of external review including regional and national federal oversight and that of an independent, national review organization.

Regrettably, CPRO cannot make the public privy to details of evaluations of cases without violation of confidentiality statutes. We are, therefore, unable to provide you with a case by case record of activities which might convince you of the extent to which CPRO goes in assuring the quality of care given to Medicare beneficiaries in our state.

Your editorial suggesting that the CPRO process fails to protect the public is based on the false assumption that sanctions are an appropriate measure of the peer review program.

On the contrary, sanctions represent a failure of the peer review system. They represent achieving by force that which should be achievable by reason. As such, they indicate an inability on the part of peer physicians to document a problem, to analyze its cause, to evoke a solution and to assure that there is no recurrence of the same or similar problems.

The Medicare sanctions process is designed to address violations of obligations to provide care of appropriate quality. As a requisite for finalizing a sanction, one must demonstrate the inability or unwillingness on the part of a physician or a facility to modify performance whenever it is found wanting. This has not been the case in our state.

CPRO has conducted review of Medicare admissions to Connecticut hospitals for the past three years. As a result of this review, CPRO's Board of Directors, which includes non-physicians as well as physicians, has initiated sanction proceedings in a number of cases. Corrective action has been taken by the involved physicians or facilities with documented improvement in quality of care. None of these cases ever reached the ultimate point of a finalized sanction because the physicians or facilities were willing and capable of correcting the problem and followed through with the action required by CPRO.

The ultimate purpose of the peer review process is the protection of the patient. If corrective measures other than final sanction actions take place, which assure that problem resolution and avoidance of recurrence has occurred, then they achieve the same objectives as sanctions and the goals of peer review are met and the public is well served.

In a field of endeavor where commitment to perfection is the ideal, it is important to recognize that medicine is still part art and part science. This makes it impossible for one biologically unpredictable human animal to make countless decisions on another biologically unpredictable human animal totally free of adverse occurrences.

In our role of unbiased evaluator, we must be doing something right. The success of the PRO program in improving the quality of care, without having to recommend final sanctions, is evidence that the peer review process works to the patient's benefit.

Edward A. Kamens, M.D.

Medical Director,
Connecticut Peer Review Organization, Inc.
Meriden, CT

(The above letter was published in the *New Haven Register* on Dec. 6, 1987 in response to a previous editorial.)

LYMPHADENOPATHY WITH SULINDAC THERAPY

To the Editor: Drug reactions involving fever, rash, arthralgias or lymphadenopathy have been noted separately or in combination after the use of many medications. Recently we observed an unusual reaction to sulindac (Clinoril) therapy similar to two previously reported.[1,2] The patient is a 44-year-old white female with seronegative rheumatoid arthritis (diagnosed in 1984). She recently experienced mild arthralgia of her right ankle with mild swelling. She was given sulindac 200 mg twice a day, as well as warm soaks, with relief. She also took several aspirins a day intermittently. Over the new two weeks, she developed profound fatigue, right elbow pain, bilateral foot pain; severe left cervical and supraclavicular lymphadenopathy; swelling of the left parotid gland, a diffuse macular nonpruritic erythematous rash on her trunk, and fever with daily spikes to 103°. Physical examination was remarkable only for the above findings. She denied weight loss, night sweats, abdominal or other pain, sore throat, nausea, headache, or diarrhea. She underwent a lymph node biopsy which revealed "interfollicular hyperplasia with marked plasmacytosis" (acid-fast bacilli stain negative); laboratory tests: normal liver-spleen scan and chest x-ray; 9,900 white blood cell count, normal differential, hematocrit 39, mean cell volume 93, platelets 187,000, erythrocyte sedimentation rate 50. All of the following were negative: blood cultures, throat cultures, viral cultures (acute and convalescent); Epstein-Barr Immunoglobin M; anti-nuclear antibodies; rheumatoid factor; Fibrin Split Products; Monospot; cold agglutinins; 3rd component of complement was 94 (normal); 4th component of complement was 9 (normal greater than 15); angiotensin converting enzyme level was 28 (normal). Albumin was 3.4g. The following were also normal: gamma globulin, urinalysis, prothrombin time, partial thromboplastin time, thrombin time.

The patient responded to discontinuance of sulindac, with resolution of the rash, fever, fatigue, over two to three days. The lymphadenopathy resolved over the next two weeks. We believe this clinical course is most consistent with a hypersensitivity reaction to sulindac.

West Hartford, CT — Herbert S. Hoffman, M.D.
Hartford, CT — Robert D. Rudnicki, M.D.

REFERENCES

1. Park GD, Spector R, Headstream T, Goldberg M: Serious Adverse Reactions Associated with Sulindac. *Arch Int Med* 1982; 142:1292-1296.
2. Sprung DJ: Sulindac Causing a Hypersensitivity Reaction with Peripheral and Mediastinal Lymphadenopathy. *Ann Int Med* 1982;97:564.

NOTICE TO CONTRIBUTORS

Members of the Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Authors preparing manuscripts for submission to *Connecticut Medicine* should consult INFORMATION FOR AUTHORS. This material may be obtained from the *Journal* office. Adherence to the instructions will prevent delays both in acceptance and in publication.

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AROUND THE STATE

Timothy B. Norbeck Receives Cancer Society Award

Timothy B. Norbeck, immediate past Chairman of the Board of the Connecticut Division of the American Cancer Society, recently received the Bronze Medal, the highest award given nationally to volunteers by the ACS.

Dr. Raymond Yesner of New Haven, President of the Connecticut ACS Division, in announcing this award, commented upon Mr. Norbeck's work in spreading the word to young people about the dangers of smoking; he has often testified in support of anti-smoking legislation, and has been "instrumental in passing enlightened anti-smoking legislation" in Connecticut.

Mr. Norbeck has been Executive Director of the Connecticut State Medical Society since 1977.

Physicians in Practice, Not Providers in Business

In his report to members at the semi-annual meeting, D. Lycurgus M. Davey, President of the New Haven Medical Association, reminded physicians that they must choose between being seen as *providers* in the *business* of health care, or *physicians* in the *practice* and *art* of patient care.

He stressed the importance of keeping pace with the medical and sociopolitical changes which so characterize this period in medicine's history. In this connection, he announced the formation of two new groups: a Bioethics Committee and a Women Physicians' Advisory Group. He reminded the members that women will shortly constitute 30% or more of the membership of the Association.

From Hartford County

The Hartford County Medical Association has announced the date for Medical Expo '88: 20-21 April at the Hartford Civic Center. The Association also announced that D. Harold Moskowitz, Chief of the Department of Radiology-Imaging at Mount Sinai Hospital, Hartford, has been elected president of the Connecticut Radiologic Society.

IN MEMORIAM

BLOGOWLAWSKI, WALTER J., Georgetown, 1927. Dr. Blogowlawski was a surgeon in the Hartford County area since 1923. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died November 12, 1987 at the age of 87.

DWYER, HUGH L., JR., Northwestern University Medical School, 1943. Dr. Dwyer was an internist in the New Haven County area since 1947. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died September 10, 1987 at the age of 70.

FEARON, HENRY D., Syracuse University School of Medicine, 1927. Dr. Fearon was a cardiologist in the Litchfield County area since 1968. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died August 30, 1987 at the age of 83.

GEVALT, FREDERICK C., JR., Columbia, 1945. Dr. Gevalt was an internist in the Litchfield County area since 1947. A former member of the *Connecticut Medicine* Editorial Board, Dr. Gevalt was also a member of the Litchfield County Medical Association and the Connecticut State Medical Society; died December 23, 1987 at the age of 73.

GLASSER, S. THOMAS, McGill, 1928. Dr. Glasser was a surgeon in the New London County area since 1970. He was a member of the New London County Medical Association, the Connecticut State Medical Society and the American Medical Association; died September 14, 1987 at the age of 86.

HOCKMUTH, LLOYD N., Tufts Medical School, 1942. Dr. Hockmuth was an anesthesiologist in the Hartford County area since 1943. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died August 30, 1987 at the age of 73.

LEWIS, GARNER L., Yale University School of Medicine, 1945. Dr. Lewis was a radiologist in the Hartford County area since 1964. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died August 24, 1987 at the age of 67.

MISSIER, PETER A., College of Physicians & Surgeons of University of Bologna, 1954. Dr. Missier was a general surgeon in the Fairfield County area since 1973. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died October 30, 1987 at the age of 60.

PINKES, SAM, Tufts, 1950. Dr. Pinkes was a general surgeon in the Hartford County area since 1956. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died November 26, 1987 at the age of 63.

SILVERBERG, SAMUEL J., Physicians & Surgeons Columbia, 1921. Dr. Silverberg was an otolaryngologist in the New Haven County area since 1921. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died November 25, 1987 at the age of 91.

SOLLOSY, ALEXANDER, Tufts Medical School, 1927. Dr. Sollosy was general surgeon in the Fairfield County area since 1928. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died August 25, 1987 at the age of 83.

TRAPP, FRANCIS W., Georgetown University, 1936. Dr. Trapp was an ophthalmologist in the Hartford County area since 1937. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died October 6, 1987 at the age of 76.

VINOCUR, MYRON, University of Michigan, 1956. Dr. Vinocur was a pathologist in the Fairfield County area since 1978. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died October 17, 1987 at the age of 56.

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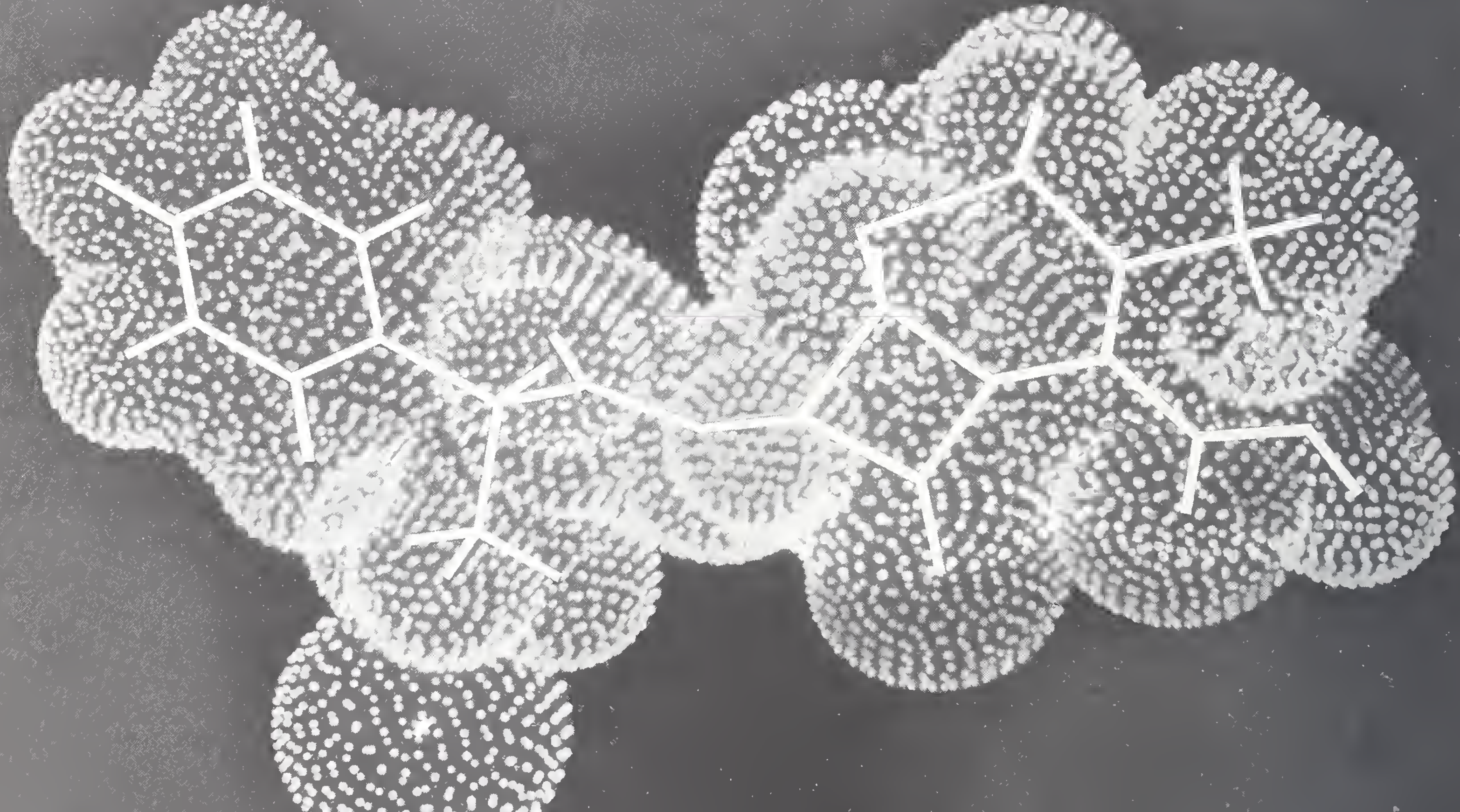

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Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics. It must be considered in differential diagnosis of antibiotic-associated diarrhea. Colon flora is altered by broad-spectrum antibiotic treatment, possibly resulting in antibiotic-associated colitis.

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- Discontinue Keftab in the event of allergic reactions to it.
- Prolonged use may result in overgrowth of nonsusceptible organisms.
- Positive direct Coombs' tests have been reported during treatment with cephalosporins.
- Keftab should be administered cautiously in the presence of markedly impaired renal function. Although dosage adjustments in moderate to severe renal impairment are usually not required, careful clinical observation and laboratory studies should be made.
- Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.
- Safety and effectiveness have not been determined in pregnancy and lactation. Cephalexin is excreted in mother's milk. Exercise caution in prescribing Keftab for these patients.
- Safety and effectiveness in children have not been established.

Adverse Reactions:

- *Gastrointestinal*, including diarrhea and, rarely, nausea and vomiting. Transient hepatitis and cholestatic jaundice have been reported rarely.
- *Hypersensitivity* in the form of rash, urticaria, angioedema, and, rarely, erythema multiforme, Stevens-Johnson syndrome, or toxic epidermal necrolysis.
- *Anaphylaxis* has been reported.
- *Other reactions* have included genital/anal pruritus, genital moniliasis, vaginitis/vaginal discharge, dizziness, fatigue, headache, eosinophilia, neutropenia, and thrombocytopenia; reversible interstitial nephritis has been reported rarely.
- Cephalosporins have been implicated in triggering seizures, particularly in patients with renal impairment.
- *Abnormalities in laboratory test results* included slight elevations in aspartate aminotransferase (AST, SGOT) and alanine aminotransferase (ALT, SGPT). False-positive reactions for glucose in the urine may occur with Benedict's or Fehling's solution and Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

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*Due to susceptible strains of *Staphylococcus aureus* and/or β-hemolytic streptococci.
† Due to susceptible strains of *Escherichia coli*, *Proteus mirabilis*, and *Klebsiella* sp.
‡ Due to susceptible strains of group A β-hemolytic streptococci.

From the Executive Director's Office

COUNCIL MEETING

Thursday, December 17, 1987

Attendance

Present in addition to the Vice-Chairman, Dr. M.S. Eslami were: Drs. Abbot, Ahamed, Ahrens, Beck, Bobruff, Bonner, Chmieleski, Czarsty, Dardick, Fox, Freedman, McDonnell, O'Brien, Orphanos, Petrie, Ragusa, Reyelt, Jr., Robbins, Rose, Rubin, Sadowski, Sosa, Sullivan, Jr., Villa, Welch, Wetstone, Zanker and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Sullivan, Mr. Tomat (FCMA), Mr. Coffey (HCMA), Ms. Harney (NHCMA) and Mrs. Ganguli (President, Auxiliary).

Absent were: Drs. Kamens, Schwartz, Upham, Van Syckle and Whalen, Jr.

Report of the President

Dr. Orphanos reported that at the present time there still was no formal contract with the Department of Aging concerning the Medical Courtesy Card but that most of the problems had been resolved and a finalized contract should be forthcoming in the very near future. He reported briefly on some of the issues acted on at the recent AMA meeting. One item was that there would be no dues increase at AMA level. Other items discussed were the Harvard/AMA Relative Value Study. PRO's criteria for service on hospital governing bodies and medical staff bylaws. Dr. Orphanos reported that he spoke at one of the reference committees on the Connecticut Medical Courtesy Card program. He also stated that just prior to the Council meeting he met with the President of the Joint Practice Committee, which is composed of the CSMS Committee on Allied Health Services and a Committee from the Nurses' Association. Discussion was entered into by the Council members concerning the nursing shortage and the possibility of expanding their practice. It was reported that the Governor had recently appointed a Task Force on Nursing and suggested that CSMS staff monitor this committee and any hearings that may be scheduled. Following discussion, it was VOTED that if CSMS does not have representation on the Task Force on Nursing that a letter be sent to the Governor requesting him to appoint two physicians to this group and that the Chairman of the Council send him a list of four names from which he could select two who would represent the physicians and the Connecticut State Medical Society.

Report of the Executive Director

Tim Norbeck reported on the resolution introduced at the AMA meeting by the Massachusetts delegation that ". . .the Commonwealth of Massachusetts was an undesirable location in which to practice." He reported that there appeared to be great antagonism between the legislators and the physicians in Massachusetts and that the legislature has threatened physicians with legislation requiring them to see Medicaid patients or face the loss of licensure in the state. He stated that if that was enacted, Connecticut would probably be facing the same issue in a year or two. Mr. Norbeck also recommended that CSMS establish a Charitable Trust or similar mechanism so that the Society might be able to contribute to various worthy causes.

Report of AMA Delegation

Dr. Stewart J. Petrie was designated to report for the AMA delegation and reported on the following:

a. **Specialty representation in the AMA House of Delegates**: Applications for representation in the House were evaluated in accordance with recently established criteria for admission of such groups, i.e., number of physicians represented, need for expertise offered to the House, etc.

b. **Principles of Life Sustaining Equipment**: AMA has developed an informational report providing a detailed study of the statutes, procedures and court opinions relating to decisions to forego life-sustaining treatment and the patient's right to refuse any medical treatment. The report includes consideration of the physician's exposure to professional liability in such cases. Since the guidelines that have been developed vary from state to state, the report urges physicians to keep abreast of legal developments on these issues in their individual states.

c. **Ethical Issues Involved in the AIDS Crisis**: The House filed an important report of the Council on Ethical and Judicial Affairs providing ethical guidelines to physicians on three significant issues related to the AIDS epidemic:

   1. A physician may not ethically refuse to treat a patient solely because the patient is seropositive.
   2. Where there is no statute that mandates or prohibits the reporting of seropositive individuals to public health authorities and a physician knows that a seropositive patient is endangering a third party, the physician should:
      (a) attempt to persuade the infected patient to cease;
      (b) if persuasion fails, notify the authorities;
      (c) if the authorities take no action, notify the endangered third party.
   3. A physician who knows that he or she has an infectious disease should not engage in any activity that creates a risk of transmission of the disease to others.

The AMA has a broad range of ongoing activities that respond to the AIDS challenge and is studying the following: Accuracy of the Elisa and Western Blot Serologic Tests for HIV Infection, Prevention of HIV Transmission in Prisons, Financing of Care for AIDS, etc.

d. **Proper Visual Identification of Non-Physicians Who See Patients**: A recommendation was adopted encouraging all allied health care personnel to have adequate visual identification of their professional position in the health care setting.
e. **Identification of Physicians**: Physicians should be identified as a member of the hospital staff and not as a member of the hospital administration.
f. **Medicare Actions**: A recommendation was referred to the Board of Trustees to assess the extent of the gap between what physicians' usual fees are and what third party payers allow as payment for their services.

A resolution was adopted to communicate with the appropriate government agencies the AMA's dissatisfaction with press releases that are abusive to physicians and indict them as the single cause for Medicare cost overruns; and that the AMA continue its efforts to obtain information regarding payments made to other providers of Medicare Part B services, i.e., non-physician providers, medical equipment, and the Medicare prospective pricing system which shifted services from inpatient to outpatient settings, in an attempt to establish the true basis for the Medicare Part B premium increase; and that the AMA inform the public, federal agencies, and the Congress of the disposition of Part B premiums.

The Harvard/AMA Relative Value Study was discussed at length at the reference committee and in the House of Delegates and the AMA will continue to monitor and report to the House and membership on the progress of the study. The development of this study is one of the most important factors in deterring the legislation of DRG's for physicians.

A resolution was adopted calling for the AMA to urge third-party payers to provide payment for physicians' standby services, when the attending physician certifies that they are medically necessary and when the standby physician is providing such service to only one patient at a time, is either physically present in the operating suite or immediately available.

Many resolutions were introduced encouraging state medical societies to develop voluntary Medicare assignment programs that will assist in the financial protection of the elderly of limited means. CSMS, of course, has already expanded this program statewide with the issuance of the Medical Courtesy Card.

A task force has been appointed to study any inappropriate third party payer influence on clinical decision-making and/or patient ability to receive treatment.

A resolution was adopted calling for the AMA to develop guidelines and strategies for dealing with the publication of Medicare hospital mortality statistics by HCFA and for informing the public of the limited value of such listings.

The AMA reaffirmed its policy of favoring individualized medical care through private insurance and allowing free-choice options.

g. **Tort Reform & Professional Liability**: AMA has been requested to compile a report of state tort reforms that have been overturned by the courts and to initiate a study regarding the effect of recent professional liability legislation in order to provide information regarding the effect of such legislation on the frequency and size of claims and extent to which current experience may justify a reduction in liability insurance premiums. The question of medical student liability insurance was referred to the Board of Trustees for study and report.
h. **Use of Alcohol and Tobacco**: The usual resolutions were introduced concerning the irresponsible use of alcohol and tobacco and to request liquor, beer and wine groups to do more by including in their advertising specific warnings against driving after drinking, and levying additional taxes on tobacco products with the revenue from the increase being apportioned to Medicare.
i. **Qualifications for Medical Licensure**: The AMA adopted a resolution that firmly opposes the imposition of federally mandated restrictions on the ability of individual states to determine the qualifications of physician candidates for licensure to practice medicine.
j. **Enrollment of Medical Students**: Concern was expressed from various sources about the declining applicant pool for the nation's medical schools. The AMA Council on Medical Education is undertaking a study of the applicant pool and ways to attract highly qualified applicants to the profession.
k. **Intrusion by Hospitals Into Private Practice of Medicine**: The AMA is continuing to urge third-party payers to implement coverage policies that do not unfairly discriminate between hospital-owned and independently-owned outpatient facilities.
l. **Hospital Bylaws**: A resolution was adopted requesting the AMA to encourage hospital medical executive committees to: examine hospital/corporate bylaws, rules and regulations for any conflicts with those of the medical staff; request hospital governing bodies to notify the medical staff of any impending changes in the hospital bylaws; and advise members of the medical staff of the effect of hospital bylaws, rules and regulations on medical staff bylaws.
m. **Medical Staff Participation in JCAH Site Surveys**: AMA was requested to work with the JCAH to assure that appropriate members of the medical staff, along with their designated support personnel, represent the medical staff during the Joint Commission site survey. Also, it was recommended that appropriate administrative staff participate in the survey.
n. **Papanicolaou Tests in Healthy Women**: A report was adopted that after a woman has had three consecutive

negative tests, the Pap test may be performed every other year in consultation with the physician.

o. **Handgun Availability**: The AMA advocates a waiting period and background check for all handgun purchasers.

p. **AMA Specialty Journals**: Due to fiscal reasons, the 1988 specialty journals will be distributed without charge to specialists and subspecialists for which each journal is published, regardless of the AMA membership status of the recipient. Journals will be available to others on a subscription basis with a discount offered to AMA members. It was reported that if no change in policy was made it might necessitate a $25.00 dues increase to support the journals.

q. **Foreign Medical Graduates**: A resolution was adopted that the AMA offer encouragement and assistance to state and county medical societies in fostering greater participation of foreign medical graduates in leadership positions at all levels of organized medicine.

r. **PRO's**: A resolution on the elimination of monetary fines as PRO sanctions was referred for further study and report. Adopted was a resolution requesting the AMA to work to eliminate the bounty system in the Office of the Health and Human Services Inspector General, which provides employees with bonuses based on the number of sanctions imposed and penalties recovered.

s. **Medical Consequences of Nuclear War**: It was reported that although there is no real defense against nuclear warfare, physicians are encouraged to participate in available preparedness programs, and to support prevention as the major strategy against nuclear war.

Dr Petrie reported that the items he mentioned are just a partial listing of many items discussed at the meeting, but the most important issues at this meeting were the subject of AIDS, nursing shortage and the medicare issues.

Other members of the AMA delegation commented on Dr. Petrie's report and reported on several other actions taken on the meeting. Following discussion, it was VOTED that CSMS Council stress its displeasure to the Board of Trustees of the AMA policy regarding the distribution of specialty journals without charge to specialists, subspecialists and self-designated specialists for which each journal is published, regardless of the AMA membership status of the recipient; and that this policy will hamper the promotion of unified membership. Copies of this action are to be sent to all other state societies. It was further VOTED that in the future the AMA report be prioritized and put in writing prior to the meeting of the Council.

Discussion of CSMS Semi-Annual Meeting of the House of Delegates

The Councilors from the Fairfield County Medical Association had requested an opportunity to discuss the subject meeting. They noted that many of the delegates were leaving prior to the end of the meeting and suggested that perhaps having a no frills meeting starting at 12:30 with a simple luncheon, eliminating guest speaker; reducing the size of the House of Delegates and quorum requirements, and sending a letter to current delegates outlining their poor attendance and not staying to the end might improve the meeting.

Following discussion, it was

VOTED that the Council request the Speaker of the House to consider a more rigid running of the meeting and limiting debate so that the meeting would move along expeditiously.

VOTED to reduce the size of the quorum in the House of Delegates to fifty percent of the delegates registered. This recommendation will be referred to the Bylaw committee.

CSMS Section on Surgery

A letter was received from the President of the Section on Surgery indicating that the Section has been inactive for several years and it was the recommendation of the group that the Section be dissolved. It was VOTED to accept the recommendation and discontinue the Section on Surgery and that any funds on hand revert to CSMS.

1988 Annual Meeting

At the last meeting of the Council, staff was requested to investigate the feasibility of holding a one day meeting with the House of Delegates and scientific programs running concurrently. Inquiry has been of three locations where it might have been possible to consolidate the meeting, however dates requested were not available. Due to the pressure of time, it was decided that the 1988 meeting would continue to be held over a period of two days.

Life Members

It was VOTED to receive as information the following list of Life Members effective 1/1/88: John Beeble, Waterbury (NH), Howard C. Gold, Newington (H), Larry E. Edwards, Fairfield (F), Charles H. Gray, Old Greenwich (F), Joseph L. Horowitz, Stratford (F), Samuel J. Janet, Orange (NH), George L. Kennedy, Danielson (W), Michael J. Langan, Greenwich (F), M. Joseph Mancinelli, Stamford (F), Vincent A. Manjoney, Bridgeport (F), Albert M. Moss, Huntington (F), Robert H. Noonan, Bridgeport (F), Norman R. Richards, Waterbury (NH), James E. Sheehan, Ridgefield (F), Harry Y. Twiss, Middletown (M), Sherman L. Waldron, Thompson (W), Clayton B. Weed, Jr., Stamford (F), Gordon B. Wheeler, Stamford (F).

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on December 17, 1987. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

NEW MEMBERS

Members of the Connecticut State Medical Society join in welcoming these new members into a progressive state medical organization. CSMS is dedicated to promoting the science and art of medicine, the protection of the public health, and the betterment of the medical profession. Each new member is encouraged to join with other CSMS members at both the county and state levels in achieving these goals.

NEW HAVEN COUNTY

Douglas A. Berv, M.D., New Haven
Curtland C. Brown, III, M.D., Farmington
Gregory K. Buller, M.D., Waterbury
Scott E. Casper, M.D., Branford
Dooley Yat-Sen Chen, M.D., Meriden
Alexander K. Choi, M.D., Wallingford
Ricki-Lahn Chopyk, M.D., New Haven
Donna R. Criscenzo, M.D., Guilford
Nancy Czarkowski, M.D., Guilford
Vincent C. DiCola, M.D., New Haven
Kim C. Fletcher, M.D., New Haven
G. Davis Gammon, M.D., Hamden
Reid Gentile, D.O., Derby
Glenn Giarratana, M.D., Branford
James S. Grober, M.D., East Haven
Robert C. Gumbardo, M.D., Waterbury
John R. Hamm, M.D., North Branford
John F. Irving, M.D., New Haven
Mark G. Johnson, M.D., Waterbury
Barbara Klein, M.D., New Haven
Leonard Koliani, M.D., Watertown
John M. Lasala, M.D., East Haven
Dori Laub, M.D., New Haven
David B. Melchinger, M.D., New Haven
John V. Pito, M.D., Wallingford
Katherine A. Reese, M.D., Ansonia
James S. Rosenthal, M.D., Hamden
Herman J. Scharfenberger, M.D., Fairfield
Michael G. Sermer, M.D., Waterbury
Phyllis H. Shapiro, M.D., Milford
Mahadevan Shetty, M.D., Waterbury
Philip J. Silverstone, M.D., Orange
Neil D. Stein, M.D., New Haven
Prasad S. Sureddi, M.D., Waterbury
Aaron N. Tessler, M.D., Guilford
Ralph Tremaglio, M.D., Naugatuck
Jack Turner, II, M.D., Shelton
Glen Vahjen, M.D., Trumbull
Maritza Viscal, M.D., East Haven
Ellen B. Wolfson, M.D., Wallingford
Robert Woo, M.D., New Haven

HARTFORD COUNTY

Robert J. Audet, M.D., Manchester
Michael P. Bernstein, M.D., Enfield
Mary Jane Bovo, M.D., Hartford
James J. Brakoniecki, M.D., Hartford
Frederick J. Bunke, M.D., Hartford
Ronald E. Burt, M.D., Hartford
Patricia Anne DeFusco, M.D., Hartford
Albert J. DeNuzzio, M.D., Newington
Kenneth W. Elligers, M.D., Hartford
Thomas Freund, M.D., West Hartford
Neville J. Graham, M.D., Hartford
Jeffrey S. Hyams, M.D., Hartford
Charles J. Ingardia, M.D., Hartford
Laura S. Inselman, M.D., Newington
Kevin J. Kiwak, M.D., Hartford
Robert Laskowski, M.D., Hartford
Susan G. Markel, M.D., West Hartford
Felix B. Mpuku, M.D., Bloomfield
John V. Pito, M.D., Cheshire
James P. Ryan, D.O., Newington
Alan Schmerler, M.D., Newington
Allan Schwarte, M.D., Hartford
April E. Scott, M.D., Farmington
Steven Sobelman, M.D., South Windsor
David K. Spindell, M.D., Glastonbury
Kenneth R. Stone, M.D., Avon
Evelina Storlazzi, M.D., Southington
John B.G. Trourn-Trend, M.D., New Britain
William L. Webb, Jr., M.D., Hartford

FAIRFIELD COUNTY

Rodrigo Acosta, M.D., Stamford
Rudy T. Andriani, M.D., Stamford
Richard J. Annulli, M.D., Norwalk
Robin P. Appleby, M.D., Brookfield
Orestes J. Arcuni, M.D., Danbury
Barton T. Belkin, M.D., Bridgeport
Jonathan B. Bell, M.D., Danbury
Sanford H. Benjamin, M.D., Stamford
Jeffrey M. Bernstein, M.D., Wilton
James A. Blake, M.D., Bridgeport
Gary Blick, M.D., Greenwich
D. Barry Boyd, M.D., Greenwich
Steven M. Brown, M.D., Stamford
Charles C. Cahn, M.D., Danbury
Alfonse M. Campo, M.D., Stamford
James R. Carlson, M.D., Stamford
Craig S. Conoscenti, M.D., Norwalk
Stephen Cooper, M.D., Stamford

FAIRFIELD COUNTY (continued)

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Matthew M. Farrell, M.D., Brookfield
Frances W. Ginsburg, M.D., Stamford
F. Scott Gray, M.D., Danbury
Gail S. Haiken, M.D., Danbury
William B. Hale, M.D., New Canaan
Hugo V. Hart, M.D., Bridgeport
Arthur P. Heliotis, M.D., Norwalk
Steven E. Hindman, M.D., Greenwich
Douglas Hudson, M.D., Stamford
Richard G. Huntley, M.D., Norwalk
Christopher M. Inglese, M.D., Bridgeport
Merrill B. Jaffe, M.D., Stamford
Gary E. Kalan, M.D., Greenwich
Lisa R. Kantrowitz, M.D., Bridgeport
Jeffrey N. Kaplan, M.D., Stratford
William T. Keavy, M.D., Stamford
Vincent E. Kerr, M.D., Trumbull
Laurence A. Kirwan, M.D., Norwalk
Lukas A. Konandreas, M.D., Stamford
James S. Krinsley, M.D., Stamford
Daniel W. Lang, M.D., Bridgeport
Sung H. Lee, M.D., Stamford
Steven B. Levine, M.D., Fairfield
Steven W. Lutzker, M.D., Stratford
M. Judson Mackby, M.D., Danbury
Jean P. Marachi, M.D., Fairfield
Stephen A. Mathias, M.D., Danbury
Philip A. Micalizzi, M.D., Bridgeport
Bessie A. Montesano, M.D., Danbury
Irene F. Moreira, M.D., Brookfield
Friedrich C. Mueller, M.D., Stamford
Carole M. Presnick, M.D., Bridgeport
Clark T. Randt, M.D., Greenwich
Patricia A. Richard, M.D., Milford
Rick D. Rosen, M.D., Fairfield
Harvey P. Rubin, M.D., Stamford
Donald H. Rudick, M.D., Westport
Paul Sachs, M.D., Stamford
James Sarnelle, M.D., Stamford
Jeffrey B. Satinover, M.D., Stamford
Francis R. Scifo, M.D., Stratford
Evangeline S. Specht, M.D., Shelton
Neil T. Specht, M.D., Bridgeport
John A. Svogun, M.D., Stamford
Carol L. Upright, M.D., Stamford
Bruce P. Wainer, M.D., Stratford
Leonard A. Wald, M.D., Norwalk
Avi Weiner, M.D., Stamford

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Thomas J. Manning, M.D., New London
Patricia M. Miller, M.D., Groton
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Dale L. Sotherland, M.D., New Milford
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Brigitte P.P. Worgaftik, M.D., Torrington
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Joseph B. Weissberg, M.D., Guilford

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Amente Lopez, M.D., Rockville
Girish Sharma, M.D., Rockville
ShirPrased Thawar, M.D., Stafford Springs

WINDHAM COUNTY

Ann Finegan, M.D., Danielson
Steven Green, M.D., Willimantic
Michael Therrien, M.D., South Woodstock
Douglas Whittemore, M.D., Willimantic

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

EMERGENCY MEDICINE

Park City Hospital in Bridgeport, CT is seeking full-time Emergency Medicine physician. Twenty-six thousand E.R. visits with Industrial Medical Center in E.R. Active Paramedic Program. Certification in ACLS and experience in Emergency Medicine required. First year compensation $96,000 with attractive benefit package. Send current CV to: Don Rankin, M.D., Emergency Department, Park City Hospital, 695 Park Ave., Bridgeport, CT 06604 or call (203) 579-5040.

Connecticut. Full-time position in Emergency Services at a greater Hartford area community hospital. Candidate should be BE/BC in Emergency Medicine or Primary Care. Competitive salary with a full benefit package. Send CV to Bradley Memorial Hospital, Personnel Department, 81 Meriden Ave., Southington, CT 06489.

Full time position available for an emergency physician in 225-bed community hospital in Eastern Connecticut with 40,000 ED visits yearly. Competitive salary, four weeks vacation, plus other excellent benefits. Send CV to G. Springer, M.D., Chief, Department of Emergency Services, The William W. Backus Hospital, 326 Washington St., Norwich, CT 06360.

FAMILY PRACTICE

BC/BE family practitioner to join same in active growing diverse practice in Central Connecticut. Attractive salary package leading to partnership. Please send resume to CSMS, c/o FP/LB.

FAMILY PRACTICE/INTERNAL MEDICINE

Excellent opportunity for a BC/BE family physician or internist to join an established practice located in central Connecticut shoreline town. Affiliation with hospital provides for minimal time commitment to administrative detail. Practice structured on private practice model. Hospital practice component required. Very competitive compensation, with opportunity to acquire equity interest in practice. Send CV to CSMS, c/o FP/GO.

Full time FP/IM needed for moderate-sized community Health Center in Hartford for July, 1988. Regular hours, no weekends, full benefits, including malpractice. Four weeks vacation and all major holidays. Competitive salary offered. EEO. Please contact Dr. Kurt Myers, 81 Overlook Terrace, Hartford, CT 06106.

INSTITUTIONAL MEDICINE

Doctors wanted for a small growing Health Care Facility in East Hartford, CT. Excellent way for new doctors to start up a practice. Please call or write: V.I.P. Health & Safety, 800 Silver Lane, Suite 201, East Hartford, CT 06118. (203) 569-3640.

INTERNAL MEDICINE

Internist BC/BE with or without subspecialty wanted for growing two-physician group in southwestern Fairfield County. Excellent opportunity for combining active primary care practice with local hospital teaching responsibilities. Please reply to CSMS, c/o IM/RM.

Internist, BC/BE to join established internist in beautiful northwest Connecticut. Modern office across from hospital. Excellent practice opportunity. Contact Dr. Richard Collins, P.O. Box 1168, Sharon, CT 06069.

Medical practice for sale. BC internist will be retiring during the summer of 1988. Modern office in a modern office building with private parking, close by the New Britain General Hospital, a teaching hospital of University Connecticut Medical School. Excellent group coverage available. Contact Dr. Sidney E. Eisenberg, 33 Lexington St., New Britain, CT 06052. Call evenings (203) 229-6982.

MISCELLANEOUS

Internist/Family Practitioner/General Practitioner. Excellent opportunity in suburban Hartford area. New office space available. Send inquiries to CSMS, c/o MISC/CA.

Salaried physician to run medical office in Windsor, Connecticut. Excellent opportunity. Equity position available. Full benefits. Send confidential resume to: P.O. Box 99, Windsor, CT 06095.

BE/BC physician (IM, FP, ER, SUR) is needed to staff an extended hour private practice in Simsbury, CT. Practice includes internal medicine, endocrinology, minor non life-threatening trauma and some pediatrics. Part time or full time hours are available. Salary is negotiable. Please send CV to or telephone: Dr. Beth Hodge, 153 Westledge Rd., West Simsbury, CT 06092. (203) 651-5278.

OBSTETRICS & GYNECOLOGY

N.W. Connecticut B.C. solo OBS/GYN seeks associate to join well-established practice. Part time possible. Please send CV to CSMS, c/o OB/KD.

Excellent opportunity for a BC/BE. OB/GYN to join an established two-person practice in central Connecticut. The position would involve devoting half-time to private practice and half-time as Medical Director of hospital-sponsored OB program. OB program responsibilities include supervision and training of residents. Competitive salary and fringe benefits. Send CV to CSMS, c/o OB/GA.

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PEDIATRICS

Grove Hill Medical Center. A 42-physician multispecialty group, including five pediatricians, seeks a highly qualified Pediatrician to develop the specialty within a neighboring satellite facility. This position affords the opportunity for association within one of the East Coast's most respected group practices; generous salary and benefits, and earned partnership status. Please forward copy of CV to: Administrator, Grove Hill Medical Center, 300 Kensington Ave., New Britain, CT 06501.

Female pediatrician seeks BC/BE associate for growing established practice near New Haven. Competitive salary and benefits with early partnership. Please send CV with references to CSMS, c/o PED/EJ.

Pediatrician. BE/BC. University trained, needed to join solo Pediatrician in semi-rural Western Connecticut. Please call (203) 355-4113.

BC/BE well-trained pediatrician wanted to join long and well-established solo practice in central Connecticut. Located in attractive community with excellent hospitals and medical school. Early partnership. Send CV and references to CSMS, c/o PED/EA.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

ANESTHESIOLOGY

Immediate available. Age 47. Presently in practice. AB cert. MD, Kanazawa University School of Medicine, Japan; Int., Muhlenberg Hospital, Plainfield, NJ; Res., The Johns Hopkins Hospital, Baltimore, MD. No preference to size or type of practice. Write, Shigeru Ueda, M.D., 2070 E. Wyoming, Las Cruces, NM 88001.

FAMILY PRACTICE

July '87. Age 36. Presently in practice. Nat'l bds. AB cert. D.O., Philadelphia College of Osteopathic Medicine, Philadelphia, PA; Int., Naval Reg. Medical Center, Jacksonville, FL; Res., Naval Hospital, Camp Pendleton, CA. Prefers solo, group or associate type practice in a medium-sized community. Write, William B. Glenn, D.O., 2 Raintree Way, Havelock, NC 28532.

GENERAL SURGERY

Aug. '88. Age 31. Presently in practice. Nat'l bds. AB cert. MD, University of South Florida, Tampa, FL; Int. and Res., U.S. Naval Hospital, San Diego, CA. Prefers solo, group or associate type practice in a medium-sized practice. Write, Laurier J. Tremblay, Jr., M.D., 11830 Caminito Ronaldo #224, San Diego, CA 92128.

July '88. Age 33. AB elig. MD, Turin University, Italy; Int. and Res., New Rochelle Hospital, New Rochelle, NY. Prefers solo, group or associate type practice. Write, John S. Ciocchi, M.D., 80 Guion Place, Apt. 3W, New Rochelle, NY 10801.

INTERNAL MEDICINE

July '88. Age 45. Licensed in Connecticut. FLEX. AB elig. MD, USSR, Kiev Institute of Medicine, USSR; Int. and Res., St. Mary's Hospital, Waterbury, CT. Particular interest in taking care of elderly. Write, CSMS, c/o MB/IM.

Endocrinology. Immediately available. Age 42. Nat'l bds. AB cert. MD, Thomas Jefferson Medical College, Philadelphia, PA; Int. and Res., Wilmington Medical Center, Wilmington, DE; Fellowship, Medical College of Pennsylvania, Philadelphia, PA. Prefers solo, group or associate type practice with no time limitation but must be in the surrounding Hartford area. Write CSMS, c/o BOH/IM.

Gastroenterology. July '88. Age 32. Licensed in Connecticut. Nat'l bds. AB cert. (IM); AB elig. (GI). MD, Albert Einstein College of Medicine, Bronx, NY; Int. and Res., Hartford Hospital, Hartford, CT; Fellowship, Chief Resident, Hartford Hospital/University of Connecticut Health Center, Farmington, CT. Prefers group, associate or institutional type practice. Write, K.J. Roalsvig, M.D., 65 Maplewood Ave., W. Hartford, CT 06119.

Hematology/Oncology. Immediately available. Age 33. Nat'l bds. AB cert. MD, Int. and Res., Georgetown University, Washington, DC; Fellowship, George Washington University Medical Center, Washington, DC. Prefers solo, group or associate type practice. Write, William K. Kelly, M.D., 10008 Menlo Ave., Silver Spring, MD 20910.

PATHOLOGY

Immediately available. Age 42. Licensed in Connecticut. AB cert. MD, Madras University, India; Int., Memorial Hospital, Niagara Falls, Canada; Res., McGill University, Montreal, Canada; Fellowship, UConn Health Center, Farmington, CT (Hematopathology). Prefers group, associate or institutional type practice. Write, Uma P. Viswanathan, M.D., 77 Deer Hill Ave., Danbury, CT 06810.

PEDIATRICS

July '88. Age 30. FLEX. MD, N.H.L. Municipal Medical College, Gujarat University, India; Int., V.S. General Hospital, India; Res., The Brooklyn Hospital, Brooklyn, NY. Currently, chief pediatric resident in Woodhull Medical and Mental Health Center, NY. Write, Amit Sheth, M.D., 1305 E. 18th St., Apt. #6B, Brooklyn, NY 11230.

PAID CLASSIFIED ADVERTISING

PART-TIME PRACTICE. Excellent guaranteed income. Full insurance coverage. Immediate and continuing need for locum tenens physicians in lake/mountain region of Maine. Family practitioners and internists sought. Work when you want; as much as you want. Housing provided. Send cover letter and CV to Lisa Miller, P.O. Box 728, Waterville, ME 04901, (207) 873-1127.

CENTRAL MAINE. BC/BE family practitioner or internist to join progressive rural practice in beautiful lake/mountain region. Full malpractice coverage, reasonable on-call schedule. Excellent family and medical environment. Contact Lisa Miller, (207) 873-1127 or send CV to P.O. Box 728, Waterville, ME 04901.

The Nasal Septum and Restless Sleep

JOHN A. KIRCHNER, M.D. AND HOWARD W. SMITH, M.D.

Restless sleep is one of the most frequent afflictions of the adult population. It is often due to intermittent airway obstruction which results in periodic apnea and snoring. In recent years, attention has been directed to the soft palate and pharynx as the site of functional obstruction, particularly that type occurring in the obese or "Pickwickian" patient, and producing nighttime restlessness and daytime somnolence.

Less attention, however, has been directed toward a more frequent type of airway obstruction that occurs in the otherwise normal individual, namely one with anterior deviation of the nasal septum. The resultant obstruction may be compensated for during the day, when the subject can resort to mouth breathing, but is usually worse during the night, because of its interference with the normal nasal cycle that operates most actively when the subject is in the recumbent position. The resulting complaints, such as morning fatigue, dry throat, backache, and localized areas of pain in a shoulder or hip may not be associated, in the patient's mind, with nocturnal nasal obstruction.

Our attention was first called to this fact some years ago by a 30-year-old woman, referred by the thoracic surgery service for investigation of a chronic sinus infection. She had been admitted because of a chronic cough, tentatively diagnosed as bronchiectasis. Chest films and bronchograms were indeterminate, but sinus films revealed an opacified left maxillary sinus.

Physical examination revealed a straight, midline nose. Inspection of the nasal vestibule, however, showed a marked deviation of the nasal septum just opposite the lower edge of the right upper lateral cartilage. When the patient lay on her left side, the right upper lateral cartilage fell into contact with the deviated septum, completely obstructing the right nasal chamber (Figure 1A). The left nasal chamber was voluminous (Figure 1B), but the inferior turbinate was abnormally large, obstructing the area of the maxillary sinus orifice.

Irrigation of the left maxillary sinus produced green pus which yielded *Diplococcus pneumoniae* on culture. Since the infection had failed to respond to antibiotics therapy, a left intranasal antrostomy was performed, the septal deviation corrected, and the hyperplastic left inferior turbinate partly resected.

Soon after the patient was discharged, the cough cleared completely. Although this was not an unusual consequence of a successful sinus operation, she then reported a side-benefit that had hitherto been unknown to the surgeon.

"My backache has cleared up for the first time in years," she reported.

Disclaiming any credit for this particular bonus, the surgeon remarked that focal infection was no longer a viable explanation for musculo-skeletal symptoms.

"Maybe so," she replied, "but I can now sleep on either side for the first time since I can remember. Before the operation I always had to sleep on my right side, and I always woke up with a sore hip and a backache."

Discussion

The patient's original symptoms can be ascribed entirely to the structural deformity of her nasal septum, and to the resultant interference in the normal physiology of the nose.

Normally, the two sides of the nose operate independently, one nasal chamber being more patent than the other at any one time. Patency alternates between the two sides of the nose over a period of hours, a variation brought about by periodic turgescence and deturgescence of the inferior turbinates, made up largely of vascular erectile tissue. These reciprocal variations in patency make up the "nasal cycle." When one inferior turbinate is turgid, its opposite counterpart is flaccid. The cycle is most active when an individual is in the recumbent position, and particularly when lying on one side. In this lateral position, the turbinate on the lower, or dependent side, undergoes tumescence, the air entering and leaving through the opposite, uppermost side of the nose. To a considerable degree, then, one side of the nose is blocked when the other side is open.

This fact, however, requires that the swelling of the inferior turbinate be limited to the midline if an adequate intake of air is to pass through the opposite side of the nose.

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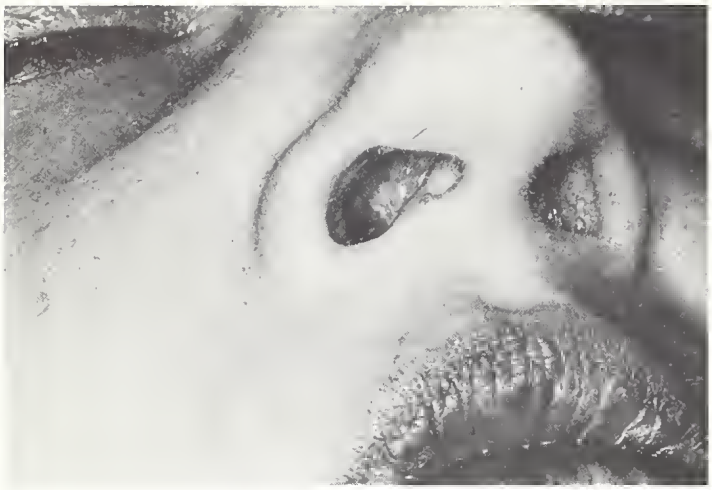


Figure 1A

The nasal septum is deflected sharply to the right of the midline at the "valve" area. When this patient lies on her left side, the inner part of the right nostril rests against the septal deflection and obstructs the right nasal chamber. Since the left inferior turbinate, in its dependent position, normally becomes turgescent, both sides of the nasal airway are therefore blocked.

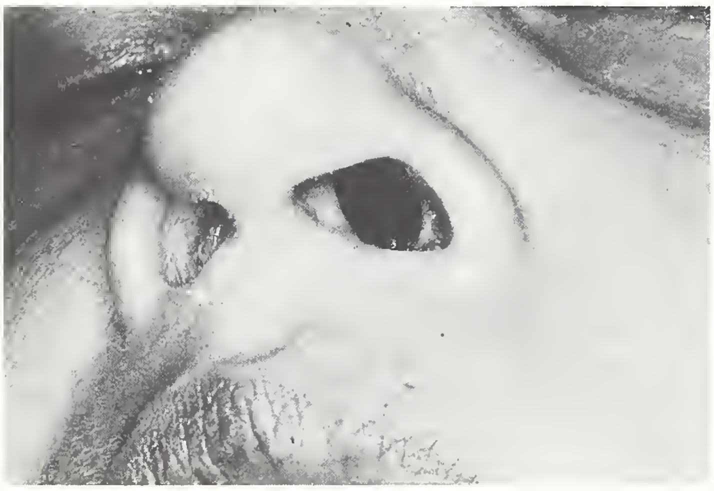


Figure 1B

The patient's left "valve" area is clear because the septum deviates toward the opposite side. She breathes well through this nostril, but the concavity of the septum on this side has allowed the inferior turbinate, further posterior, to enlarge and obstruct the maxillary sinus orifice.

This is provided by the nasal septum, which acts as a rigid "terminus," limiting the swelling of one inferior turbinate to the midline, so that air can pass through the opposite nasal chamber whose turbinate is now contracted.

This normal mechanism requires, in addition, that the nasal septum be in or near the midline. Deviations of the septum away from the midline interfere with this normal cycle by impeding the passage of air through the side that is in its "open" phase, but which is partially blocked by the septal deflection.

A septal deviation, particularly if it is anteriorly situated opposite the upper lateral cartilage as shown in the figures, makes nasal breathing difficult or impossible during sleep. The result is that the sleeper either resorts to mouth breathing, with its attendant snoring, intermittent obstruction and dry oropharyngeal mucosa, or assumes a position which compensates for the obstruction and allows nasal breathing for at least a few hours at a time. Most patients with anterior septal deflections learn to sleep on the side that allows for the minimum interference with nasal breathing and for some degree of comfort. But the result of maintaining a single position for a prolonged period is often a backache or a sore hip, particularly in the elderly patient or in one who is less well padded than usual.

The patient's chronic sinus infection was due largely to obstruction of the maxillary sinus orifice by the hyperplastic inferior turbinate. The inferior turbinates serve, through reciprocal tumescence, to adjust the space between opposing mucous surfaces within the nose, thereby providing optimum humidification and warming of the inspired air. As an unfortunate result of this mechanism, however, the inferior turbinate on the concave side of a significant septal deviation may become sufficiently enlarged to obstruct the sinus orifices. The enlargement may eventually become irreversible and require surgical correction, as in our patient.

Most anterior septal deflections are associated with little or no evidence of previous nasal injury (Figure 2). The anterior part of the nasal septum, being cartilaginous, can bend during moderate degrees of external trauma, without fracturing. More severe blows may result in a vertical fracture of the septal cartilage, usually at the bony nasal aperture, the so-called "valve" area. This results in almost complete obstruction of one side of the nose, best appreciated by inspecting the nasal vestibule with a flashlight and nasal speculum, or by having the patient inhale, closing off one nostril at a time.

Trauma to the nasal bones themselves may produce a "twisted" nose, invariably associated with septal deflection and varying degrees of airway obstruction (Figure 3A,B). Surgical improvement of the airway in this case requires not only the classical septum operation, or "submucous resection" but a repositioning of the entire nasal pyramid into the midline.

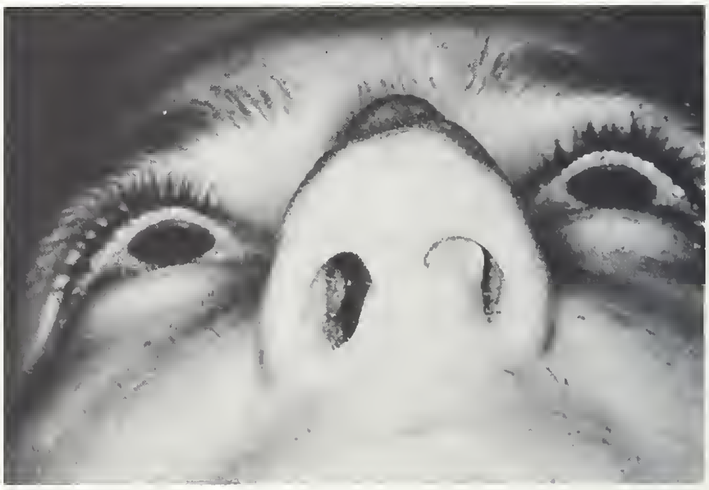


Figure 2

Lower edge of the septal cartilage visible in the left nostril. This typical dislocation is often seen in an otherwise straight, midline nose. The significance of this visible edge of cartilage is its invariable association with a more posterior obstruction at the valve area in the opposite nostril.

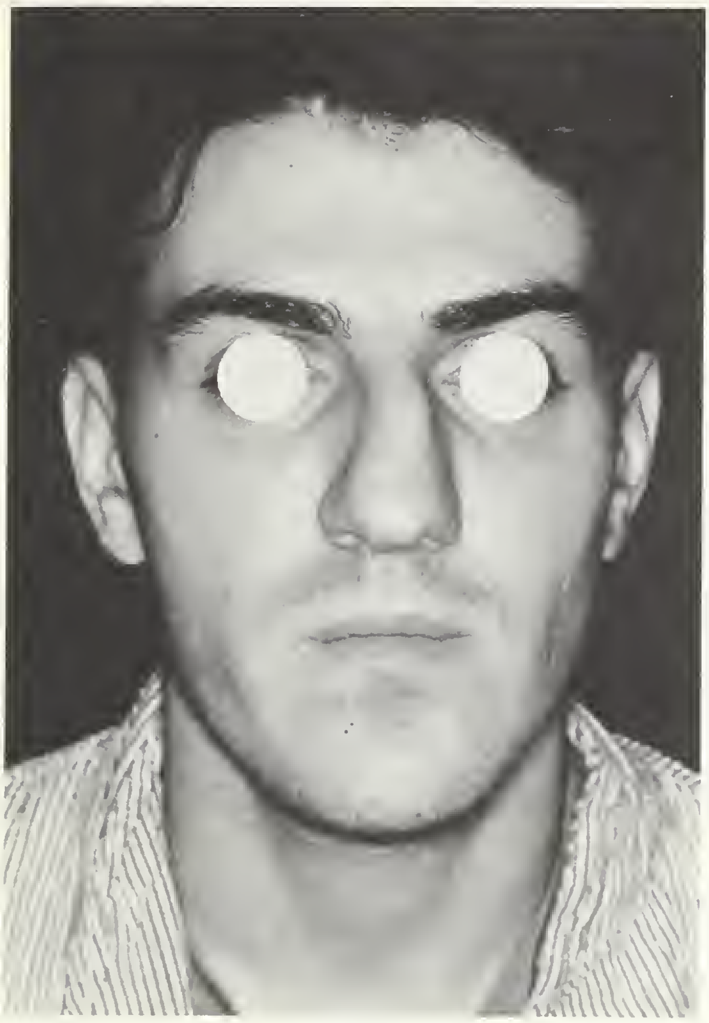


Figure 3A

Twisted nose resulting from a previous lateral blow to the nasal bones. This deformity is almost invariably associated with a vertical fracture of the cartilaginous septum and unilateral nasal obstruction as shown in 3B.

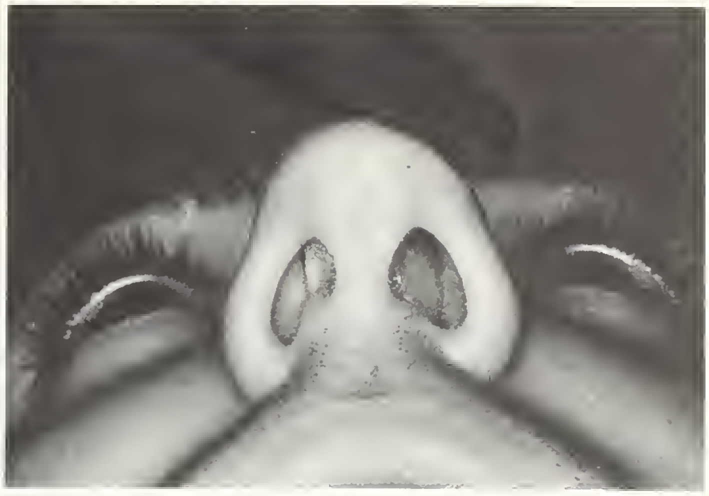


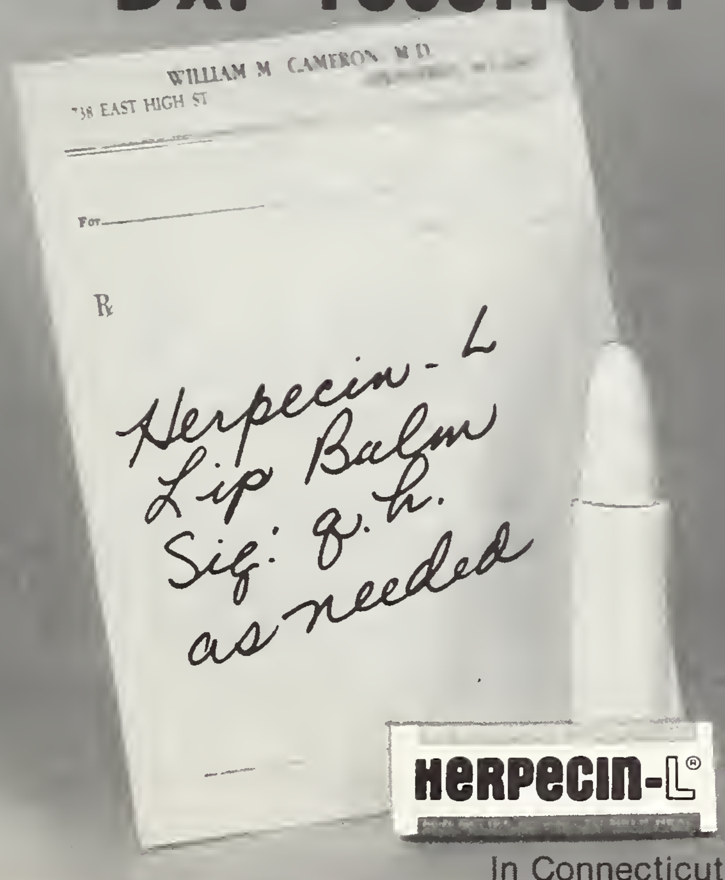
Figure 3B

Lower edge of the deflected septal cartilage visible in the right nostril. The associated contralateral obstruction is shown in the patient's left nasal vestibule at the valve area, the lateral wall of the vestibule lying in contact with the septal cartilage at the site of the previous vertical fracture. Sleeping on the right side in this case would produce bilateral nasal obstruction.

Conclusion

Pain in a shoulder or hip on awakening may be due to having maintained an unchanged position for prolonged periods during the night, in order to maintain a free nasal airway. Although intense interest has recently been directed to oropharyngeal mechanisms as a cause of nocturnal airway obstruction, episodic apnea, snoring, and resultant daytime somnolence, fatigue, and malaise, deflection of the nasal septum is a much more frequent cause of these disturbances, and is much easier to diagnose and treat.

Dx: recurrent herpes labialis



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Erythromycin Induced Cardiovascular Toxicity

CARL J. FICHTENBAUM, M.D., JOSEPH D. BABB, M.D., AND DAVID A. BAKER, M.D.

Introduction

Erythromycin was discovered in 1952 and has been widely used for over 30 years. Local gastrointestinal irritation, hepatotoxicity, ototoxicity, drug interactions, and phlebitis are among the more common recognized side effects.[1,2] Few reports of cardiovascular toxicity have been published.[3,4] We report a case of erythromycin-associated cardiovascular toxicity manifested by recurrent hypotension and nodal bradycardia.

Case Report

A 73-year-old woman presented with fever and an acute change in mental status. On the day of admission she was found confused, unable to concentrate, with slurred speech, and an unsteady gait. Her past medical history was positive for a left-sided cerebral infarction, type II diabetes mellitus, and mild congestive heart failure.

The patient appeared confused and in mild respiratory distress. The vital signs were: blood pressure 140/90 mmHg, pulse 120, respiratory rate 34, and an oral temperature of 39.8°C. Physical examination was remarkable for rales in the lower one third of the posterior thorax, regular heart sounds without murmurs or gallops, disorientation, dysarthria, and absence of focal abnormalities upon neurological examination.

The admission laboratory was remarkable for the following: glucose, 246 mg/dl; hemoglobin, 12.7 g/dl; hematocrit, 38.1%; WBC, 11, 400/μl with a normal differential count. The arterial blood revealed a pH of 7.44; Pa02, 65 mmHg; and a PaCO2, 25 mmHg. The admission electrocardiogram showed a normal sinus rhythm and was unchanged from one done five months earlier. A computed tomographic scan of the head revealed no new findings. The chest x-ray showed diffusely increased interstitial markings with a normal cardiac silhouette. The results of a lumbar puncture were normal.

The patient was presumed to have an acute bacterial infection and treatment was started with intravenous cefoperozone sodium. Blood, urine, sputum, and cerebrospinal fluid cultures were negative. Intravenous erythromycin was added on the fifth hospital day because of the possibility of *Legionella pneumophila* infection. Subsequently, the patient was transferred to the medical intensive care unit because of hypotension and a nodal bradycardia.

Upon arrival to the intensive care a Swan-Ganz catheter was inserted. The initial readings were: pulmonary arterial pressure, 48/28 mmHg; pulmonary capillary wedge pressure, 33 mmHg; calculated systemic vascular resistance, 1056 dynes/sec/cm-5, and calculated cardiac index, 2.0 L/min/m_2. The patient was started on intravenous diuretics and vasopressors. Defervescence occurred 24 hours after the addition of erythromycin. She continued to experience recurrent episodes of hypotension and nodal bradycardia which were associated with a decrease in cardiac index and elevation of the pulmonary capillary wedge pressure. An echocardiogram demonstrated diffuse left ventricular dysfunction with akinesia of the apical and septal regions. A portable multigated acquisition scan of the heart confirmed the echocardiographic findings and demonstrated an ejection fraction of between 24-32%. Serial ECGs and cardiac enzymes did not reveal evidence of recent myocardial injury.

An association between the administration of intravenous erythromycin lactobionate and the recurrent episodes of hypotension and nodal bradycardia was suspected. Consequently, the patient was closely monitored during the subsequent infusion of erythromycin (see Table 1). Hypotension and a nodal rhythm (Figure 1) associated with bradycardia occurred 45 minutes after beginning the infusion of 1g of erythromycin lactobionate. Erythromycin therapy was discontinued.

The patient improved rapidly over the next 24 hours. No further episodes of hypotension or bradycardia were observed. Acute and convalescent titers for *Legionella* were negative. She was discharged on therapy for congestive heart failure. Subsequently, she expired after suffering a cerebrovascular accident four months after she was discharged.

Discussion

This report details a case of hypotension and nodal bradycardia that we believe was induced by erythromycin lactobionate. We are unaware of any previous reports describing hypotension or bradycardia associated with this drug. There are no reports of cardiovascular toxicity associated with the lactobionate vehicle. McComb et al[3] described a case of ventricular tachycardia associated with erythromycin administration. Shoenfeld et al[4] reported a case of erythromycin/induced T-wave changes in a patient with urticaria. An extensive review did not reveal any other reports of cardiovascular toxicity.

The exact mechanism of erythromycin toxicity is unknown. Could hypotension and nodal bradycardia be a part of the natural history of this woman's illness? Could spontaneous ischemia in a patient with presumed coronary artery disease explain these events? The recurrent nature of the attacks, the temporal relationship to erythromycin infusion, and reproduction of the findings during a controlled observation period contradict these hypotheses.

There is a paucity of experimental literature on the effects of erythromycin on the heart. Regan et al[5] demonstrated the occurrence of ventricular arrhythmias after infusing erythromycin to anesthetized dogs who had artificially induced coronary ischemia. He postulated that

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Table 1

Time	*−60 minutes*	*Time zero*	*+45 minutes*	*+105 minutes*
CI	2.3	2.4	2.1	2.5
HR	103	102	53	92
BP	103/52	122/57	60/20	99/50
ECG rhythm	sinus	sinus	nodal	sinus
SVR	–	1371	725	947
CVP	–	21	24	24
PCWP	29	37	41	29

Table 1 includes the data obtained from the patient at the time of the infusion of erythromycin during the observation period. At time zero one gram of erythromycin lactobionate mixed in 100cc of 5% dextrose was administered in a peripheral vein over sixty minutes. Forty-five minutes into the infusion the patient developed hypotension and a nodal bradycardia. The infusion was discontinued and the patient received one ampule of intravenous epinephrine and 50mg of intramuscular diphenhydramine. Key to abbreviations: CI-Cardiac Index (L/Min/M2); HR-Hear Rate (Beats/Min); BP-Blood Pressure (mmHg); SVR-Systemic Vascular Resistance (Dynes/sec/cm −5); CVP-Central Venous Pressure (mmHg); PCWP-Pulmonary Capillary Wedge Pressure (mmHg).

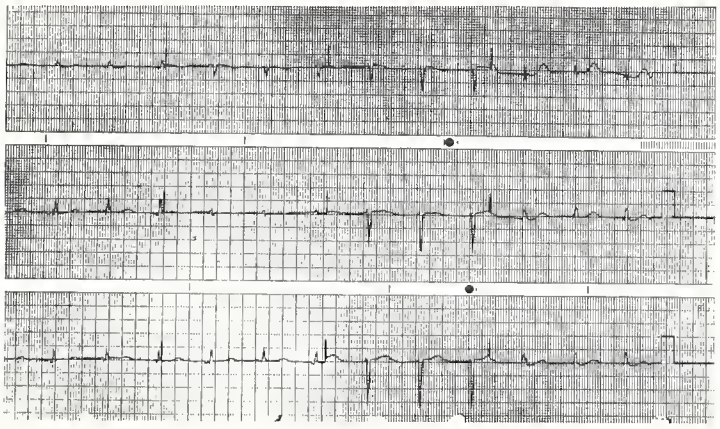

Figure 1

12-lead electrocardiograph taken during an episode of hypotension and bradycardia demonstrating a nodal rhythm.

erythromycin may enhance the net loss of potassium ions in the setting of coronary ischemia or digitalis usage and induce arrhythmias. Cohen et al[6] administered a number of antibiotics to laboratory animals. Erythromycin induced depressions of left ventricular function, right ventricular contractile force, and mean arterial pressure. The data from both of these studies provide evidence for alterations in myocardial function with erythromycin administration in laboratory animals. Both authors proposed mechanisms involving local ion transport to explain their findings.

Was hypotension or bradycardia the initial event? If the nodal rhythm was considered to be the primary event then the hypotension could be explained as a reactive event in a patient with underlying myocardial disease. If hypotension is presumed to be the initial event, development of a nodal rhythm in an individual with preexisting ischemic cardiovascular disease may represent an alteration in the normal response to hypotension, ie, hypotension usually induces reflex tachycardia. Erythromycin lactobionate may have changed the conduction of impulses, induced myocardial depression, or produced a combination of these phenomena. The experimental literature supports the view that direct myocardial depression is the most plausible mechanism for explaining the hypotension, elevated wedge pressure, and nodal bradycardia. Certainly further investigation is warranted to elucidate the precise mechanisms involved and confirm the clinical significance of this report.

Conclusion

Erythromycin is a useful broad spectrum antibiotic in many clinical settings. Cardiovascular toxicity appears to be a rare side effect. The mechanism of this reaction remains unknown. Because of the possible cardiac effects described previously, we advise using intravenous erythromycin lactobionate with caution in patients with underlying ischemic cardiovascular disease who are taking other medications which may adversely interact with this drug. Further studies are recommended to evaluate the cardiac effects of erythromycin lactobionate and its clinical significance.

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Important Advances in Clinical Medicine

Occupational Medicine

The Scientific Board of the California Medical Association presents the following inventory of items of progress in occupational medicine. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in occupational medicine that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Occupational Medicine of the California Medical Association and the summaries were prepared under its direction.

Carpal Tunnel Syndrome—A Cumulative Trauma Disorder

Repeated mechanical stress can result in low-level injuries or "cumulative trauma," and there is increasing evidence that certain repetitive or forceful motions of the hands and wrists can contribute to the development of the carpal tunnel syndrome. Postulated mechanisms by which cumulative trauma might cause the disorder include one or more of the following: tendinitis, with attendant compression of the median nerve within the carpal tunnel; local ischemia; and injury to the myelin sheath or disruption of axonal flow, or both.

In epidemiologic studies of working populations, a number of mechanical risk factors for the development of the carpal tunnel syndrome have been proposed. A case-control study of the syndrome among production seamsters found an association with using a deviated wrist or pinching hand position, particularly during forceful exertion. In another case-control study examining aircraft assembly workers, the use of vibratory hand tools and, to a lesser degree, repetitive wrist motions were associated with the carpal tunnel syndrome. In a recent cross-sectional study of 652 industrial workers, the prevalence of the syndrome was examined in relation to the postural and force requirements observed for hand and wrist activities at each job. The disorder was clinically diagnosed more than 15 times more frequently among workers classified as having "high force-high repetitive" jobs. A high degree of repetitiveness was found to be more strongly associated with the carpal tunnel syndrome than was a high degree of force. The carpal tunnel syndrome should be recognized as a possible cumulative trauma disorder when a patient's occupational or nonoccupational activites include repetitive or forceful hand-gripping or wrist-deviating motions or the use of vibrating tools.

There is evidence supporting the efficacy of surgical and nonsurgical therapy in the care of patients with the carpal tunnel syndrome. In cases due to work-related factors, however, no studies have evaluated whether surgical or nonsurgical therapy will better prevent recurrence if patients return to their previous occupations. For these reasons, when an occupational cause for the syndrome is considered, treatment should include the avoidance of repetitive hand stress and the use of wrist splinting and anti-inflammatory medications as a first line of therapy. The use of pyridoxine in the trreatment of the carpal tunnel syndrome has been suggested, but there are little data regarding its efficacy in work-related cases. If conservative measures fail, surgical intervention should be considered.

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Reprinted from *The Western Journal of Medicine*, January, 1988.

Expanding Awareness of the Hazards of Vinyl Chloride

Vinyl chloride monomer is a gas that can be converted into polyvinyl chloride resin, which, with the addition of various stabilizers and plasticizers, may be converted into pellets, powders, pastes, or film, the sum of which will constitute 35% to 40% of plastic products made. Depending on the manufacturing process, the polyvinyl chloride resin will contain a varying proportion of residual vinyl chloride monomer that will vaporize subsequently, although this proportion has been greatly diminished during the past decade. If polyvinyl chloride burns, a small but consistent release of vinyl chloride occurs, although the major toxic combustion products are hydrochloric acid and carbon monoxide.

Vinyl chloride has long been known to be hepatotoxic and a central nervous system depressant. For more than two decades we have known that it causes the development of acroosteolysis or of Raynaud's phenomenon in certain exposed workers, and the identification of a characteristic vascular abnormality has explained the probable pathogenesis of these conditions. Vinyl chloride has also been reported to be the cause of "vinyl chloride disease," a syndrome resembling one or more of the collagen diseases, such as scleroderma, rheumatoid arthritis, systemic lupus erythematosus, or the mixed collagen syndrome.

The carcinogenicity of high doses of this gas in rats was first reported in 1970, and human exposure leading to an unusual type of liver tumor—angiosarcoma—was reported in 1974. The accumulated reports of an increased risk of hepatic angiosarcoma associated with an antecedent exposure to vinyl chloride have achieved almost the same degree of acceptance in current medical wisdom as the association between mesothelioma and asbestos. Just as asbestos causes more cancers than mesothelioma, however, the carcinogenic activity of vinyl chloride is much broader than hepatic angiosarcoma. After absorption, it is metabolically converted to chloroethylene epoxide, which is highly reactive and binds covalently to nucleic acids, increasing the mutation rate in any tissue that can support this metabolic change. On this basis, it is not surprising that a 1981 review of the epidemiologic studies of workers exposed to vinyl chloride has shown a significant excess risk in four of eight studies of biliary and digestive system cancers, in five of eight studies of brain tumors, in three of eight studies of respiratory system cancers, and in one of five studies of lymphatic and hematopoietic system cancers. A more recent 27-year study of exposed workers in Norway reported only a single case of hepatic angiosarcoma but an increased risk of colon cancer, lung cancer, melanoma, and thyroid cancer.

The experimental and epidemiologic evidence for the carcinogenicity of vinyl chloride monomer is solid, but appropriate protective measures continue to be overlooked frequently. Because a large proportion of plastics manufacture takes place in plants too small to retain their own medical staff, it follows that many, if not most, cases of cancer associated with this gas will first come to the attention of non-occupation-medicine physicians who need to be aware of the growing data base linking exposure to vinyl chloride and an expanding array of cancers. As was the case for asbestos, such medical recognition is likely to be essential to the achievement of effective exposure control.

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Recognizing the Health Hazards of Ethylene Oxide

Ethylene oxide (C_2H_4O) is an important industrial chemical used in sterilzation and many manufacturing processes. At ambient temperatures, it is a gas. In vivo, it is rapidly distributed throughout the body. Short- and long-term exposures lead to respiratory tract irritation and may lead to central nervous system depression and seizures. At high concentrations, ethylene oxide can induce lethal mutations and cause embryotoxicity in rodents. It is able to alkylate DNA-causing gene mutations leading to sister chromatid-exchange abnormalities and chromosomal damage. Several types of tumors have been described in laboratory animals associated with ethylene oxide exposures.

Five longitudinal epidemiologic studies in occupationally exposed workers in Sweden, the United States, and West Germany strongly support the association of the agent with leukemia. The data cannot be considered conclusive, as the number of workers is relatively small and it is impossible to exclude completely exposure to other workplace carcinogens. Nevertheless, these epidemiologic studies strongly suggest that ethylene oxide is carcinogenic in humans. Studies of hospital workers with long-term ethylene oxide exposure, when compared with control populations with no significant difference in educational background, suggest that neurologic dysfunction may result from such exposure. These effects may occur at exposure levels that are common in hospital sterilizing procedures. The use of ethylene oxide is primarily limited to the sterilization of medical and food products.

Because the safe level of exposure to this agent is difficult to define, persons working in close proximity to hospital, laboratory, or food sterilizers should be informed as to the known and the uncertain risks. The function of sterilizing equipment should be regularly assessed to ensure there is no human exposure. The rationale for both environmental and medical surveillance needs to be presented to all potentially exposed persons.

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Carcinogenicity of Synthetic Mineral Fibers

Synthetic mineral fibers such as fiberglass and mineral wools have assumed significant industrial importance and currently represent a $3 billion domestic industry. The durability, strength, and insulating properties of these fibers allow them to serve a wide variety of purposes, including insulation and structural support. Recognized health risks associated with synthetic mineral fibers include respiratory and skin irritation. They have been considered safe from the standpoint of cancer risk, making their use attractive in applications previously limited to asbestos fibers. Recent epidemiologic data suggest, however, that synthetic mineral fibers may be associated with increased lung cancer risk.

Concern over possible carcinogenic effects was raised in the early 1970s when it was shown that mesotheliomas could be caused in animals by instilling vitreous fibers into the pleural space. Fibers that were long, thin, and durable showed a carcinogenic potential equivalent to asbestos. Inhalation studies in animals, however, which probably represent a more appropriate model of human exposure, did not show these fibers to be carcinogenic or significantly fibrogenic.

Epidemiologic studies in human populations have also raised important questions regarding the health risks associated with synthetic mineral fibers. An increased prevalence of minimal interstitial changes has been found in chest radiographs of insulation plant workers exposed to these fibers. A large cooperative European study of more than 20,000 workers employed in the industry since the late 1930s showed an excess of lung cancers. Subjects whose first exposure occurred more then 20 years before the diagnosis of cancer and who began work in the early technologic phase of the industry's development were most strongly affected and had about a twofold increased lung cancer mortality. Similar results were reported among American workers in the industry. In comparison, lung cancer deaths among asbestos workers are increased fivefold in nonsmokers and 50-fold in smokers. Insufficient data are available to address the role of smoking for patients with lung cancer associated with synthetic mineral fiber exposure. Malignant mesothelioma has not been linked to such exposure.

Excess lung cancers in these studies appear concentrated in groups that began working in the industry before protective measures, such as dust suppression, were widely introduced, which probably have significantly reduced exposure for contemporary workers. If the potential of these fibers to cause lung cancer is dose-related, as is the case for asbestos, then it is likely that less risk accrues to today's workers and that the danger to homeowners with attic insulation of synthetic mineral fiber is negligible. Measures to minimize exposure should be consistently and conscientiously applied, however, to avoid the tragic health and economic consequences associated with occupational exposures to asbestos.

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Preplacement Medical Examinations—Update

The preplacement medical examination provides physicians with an opportunity to make an assessment of a job applicant's health risks through an examination of that person's past and present state of health. Federal regulations mandate that all employment medical recommendations be job-related. There has been a 10.5% increase in preplacement medical examinations throughout the country since 1975. Research examining their use has found that only 25% of the physicians who do these examinations have ever visited work sites to become familiar with the jobs. A large minority do not even refer to the job descriptions before making employment recommendations. A reluctance to address the "job-relatedness" of the medical evaluation places both the reliability and validity of these recommendations in question.

Although all decisions regarding employment recommendations require a thorough evaluation, making employment recommendations is extremely difficult when applicants have preexisting medical conditions that could affect their ability to safely do a job that is physically demanding. For these types of jobs, preplacement medical examinations are largely directed at detecting problems associated with the low back because those who have had one incidence of low-back pain are likely to have another. Additional studies have shown that a low cardiovascular fitness level is a risk factor for chronic back pain and can be detected during the examination.

If preplacement medical examinations are used as employment selection tools, they must conform to the federal regulations that mandate that employment selection procedures be based on job-related criteria. It is the burden of an employer to show that the medical standards used are indeed job-related. The burden this places on physicians is one of making an "informed" decision, which requires knowledge of specific tasks that will be required of a job applicant. This information is often synoptically presented in the job description and class specification, but the generality of these documents may be of limited value to a physician in making appropriate recommendations. The alternative is to evaluate an applicant using job-related information that has been collected through analyzing the most physically demanding or hazardous and essential tasks within a specific job. This information allows the physician to base the recommendation on an evaluation of the applicant's medical condition as it relates to the minimum physical abilities required to safely do the job.

An effective resolution of problems associated with the preplacement examination may require a comprehensive program consisting of strength and fitness testing and a medical examination developed on a job-related basis. Many public and private organizations currently meet these criteria. Though empirically unproved, these programs have a good potential for decreasing the incidence of job-related injuries and illnesses that may be caused by improper placements in various positions.

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What We Have Learned From Chernobyl

The Chernobyl disaster of April 26, 1986, tested the ability of the Soviet medical system to provide emergency medical care in a civilian nuclear disaster of unprecedented scope. Within 12 hours, medical "brigades" composed of about 3,000 physicians and 2,400 nurses, paramedics, and laboratory technicians had been transported to the nuclear reactor village from as far away as Moscow (640 km [400 mi]) and beyond. The on-site medical emergency team was sorting out those firefighters who required hospital admission within 15 minutes of the explosion. By four hours, 108 of 204 of the firefighters were admitted to hospitals. By the end of two days, more than 350 victims of acute radiation sickness had been evaluated, medical charts assembled, and 1,000 leukocyte counts and differentials done to estimate radiation doses. Ultimately 203 seriously irradiated — >199 rads — and thermally burned patients were admitted to hospitals in Moscow (129 patients) and Kiev (74 patients).

Despite state-of-the-art therapy that included bone marrow transplantation, 27 of 42 patients — 19 patients with more than 600 rads total-body radiation dose and 23 patients with 400 to 600 rads total-body dose — died in hospital. (Two reactor operators died or were lost within six hours of the blast.) Of 171 patients with acute radiation sickness of less severity — dose estimates 100 to 400 rads — none died. All deaths were associated with severe thermal and β-radiation burns of the skin and upper respiratory system, injuries that are known from experiments in animals to enhance the lethality of othewise tolerable radiation exposures. The rapid indentification made under austere conditions of 203 among 24,000 persons exposed to clinically significant levels of total-body irradiation who required hospital admission and the subsequent loss of only 29 of them are feats meriting our admiration of the Soviet physicians.

Representatives of the American Medical Association (AMA), various federal agencies, educational institutions, and the nuclear power industry have been meeting since the Chernobyl incident to increase the involvement of physicians in radiation emergency planning at the national and local level. The risk of radiation injuries involving transportation, spills in laboratories, clinics, hospitals, and other activities not directly related to nuclear power plants are now being evaluated by various groups, including the AMA's Advisory Committee on Nonmilitary Radiation Emergencies. Beginning in September 1987, the AMA, Oak Ridge (Tennessee) Associated Universities, and others have collaborated in demonstrating in numerous selected locations community physicians' preparedness for environmental mass casualty events.

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Psychogenic Illness in the Workplace

Occurring in a variety of populations, mass hysteria or epidemic psychogenic illness is a phenomenon noted to occur primarily where people have gathered for work or to attend school. The manifestations of this episodic form of illness have been defined as the occurrence in a group of people of a constellation of physical symptoms suggestive of an organic illness but resulting from a psychological cause, with each member of the group experiencing one or more of the symptoms. Mass hysteria is differentiated from physically caused epidemics by the absence of laboratory results and physical findings confirming an organic cause; the preponderance of illness in girls or women; the apparent transmission of illness by sight or sound, or both, or by word-of-mouth or the alleged detection of an odor; the presence of hyperventilation or syncope; a benign morbidity, frequently with an explosive or rapid spread or rapid resolution; relapses in the original site of an outbreak; and evidence of unusual physical or psychological stress.

In a study conducted in a Singapore electronics plant, a susceptability to hysteria was greater among workers younger than 20 years of age and among those employees with less than three years of service. Among the workers affected were persons with histories of psychophysiologic difficulties, who appeared more dissatisfied with their work, and in whom there was evidence of comparable behavior at home.

Mass outbreaks have been witnessed among women employees claiming skin irritation from contact with mythical "paper mites" and carbon paper, and vaginitis has been reported among workers using long-neglected and unmaintained change facilities.

Every effort must be made to assure the absence of sources of toxic contamination by a thorough environmental evaluation and measurement. Physical examination of involved workers must be done as a rational basis for the reassurance given that there are no definable infections or allergic or toxic causes for the symptoms manifested. The predisposing factors of boredom, supervisory pressure to produce, physical stressors, poor labor-management relations, impaired interpersonal communication, and the lack of social support or networking should be identified and corrected to avert recurrences of the group malady. It is particularly important that the issue not be handled lightly and that managers, affected workers, co-workers, and the media be apprised of all pertinent findings and be assured that no "poisoning" is taking place.

In these days of the recognition of the "tight building" syndrome wherein agents released within structures may accumulate or the general ventilation may be inadequate, it is important that investigations be complete so that a diagnosis of epidemic psychogenic illness can be made with surety.

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Occupational Transmission of the Human Immunodeficiency Virus to Health Care Providers

The risk to health care providers from occupational exposure to the human immunodeficiency virus (HIV) is undergoing continued evaluation in several large prospective cohort studies in progress since 1983. To date, the cumulative results from these studies are reassuring. In more than 3,000 workers with frequent and intensive occupational contact with patients with the acquired immunodeficiency syndrome (AIDS) and with laboratory specimens, including more than 1,000 workers with needle-stick or other parenteral exposures to HIV, the rate of HIV infection is less than 0.1% and at least an order of magnitude less than the risk from a similar exposure to hepatitis B virus.

Despite the documentation of low titers of HIV in most body fluids, including saliva and tears, only blood has so far been implicated as a source of occupational HIV transmission. While parenteral needle-stick exposures account for most infections, 3 of the 11 documented cases of occupational transmission reported in the world's literature occurred during cutaneous contact with HIV, and one occurred after mucous membrane exposure.

Health care providers and others who have occupational contact with blood or other body fluids should be instructed to use infection-control precautions to prevent direct contact with these substances. Because it is not possible to know with certainty which persons are infected with blood-borne pathogens, these precautions should be routinely applied by all providers and for all patients when contact is anticipated. The routine use of these precautions not only will reduce the risk of nosocomial transmission of HIV, but may also reduce the risk of transmitting or acquiring a variety of other pathogens commonly encountered in the health care setting.

Because the perceived risk of HIV infection frequently exceeds the known risk, educational and counseling services should be provided for all employees. In addition, resources and equipment for implementing infection control guidelines, such as well-fitting gloves, masks, and protective eyewear, should be readily available. Consideration should also be given to monitoring the compliance with infection-control policies so that appropriate remedial interventions can be instituted. Supervisors should be responsible for assuring that employees are aware of the hazard and are complying with required work practices.

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Marijuana Testing

The analysis of urine to detect drug use is widely used today to protect employee health and safety and to help maintain industrial quality and productivity. Marijuana testing procedures are of concern because the results are more difficult to interpret than results for other abused substances. Urine is currently the specimen of choice, being easier to test than either blood or saliva and, when testing positive, it will remain so for a longer period of time. Urine testing is less invasive, less costly, and has a shorter turnaround time than blood testing.

Marijuana (Δ9-tetrahydrocannabinol [THC]) enters the circulation rapidly by smoking (minutes) and more slowly by ingestion (1½ to 3 hours) and is so highly metabolized that only a small fraction that enters the bloodstream is excreted unchanged in the urine. THC is rapidly converted by hepatic enzymes to several metabolites, the most prevalent of which is THC carboxylic acid. THC is stored mostly in adipose tissue and may accumulate faster than it can be removed in persistent users. For example, in a person using three or more joints per day who stops smoking marijuana completely and then adopts an exercise fitness program, thereby mobilizing body fat, urine specimens will test positive for THC at 50 ng per ml to 100 ng per ml or more for over two months, whereas one who smokes an occasional joint will test positive at from 50 to 100 ng per ml or more for three to four days. In addition, passive inhalation of marijuana smoke by nonusers occasionally will result in a concentration of 20 ng per ml and in rare cases as high as 40 ng per ml. THC testing is divided into sensitive screening tests (presumptive) and specific confirmatory tests (definitive). Most current screening technology involves immunoassay techniques, the private sector using primarily the enzyme-multiplied-immunoassay technique—EMIT-d.a.u. for a large number of specimens (more accurate), and EMIT-st for a small number of specimens (less accurate) (Syva Corporation)—whereas the federal government and military prefer the radioimmunoassay (RIA, Roche). A fluorescent immunoassay technique using polarized light—known as TDx (Abbott Laboratories)—has recently become available.

Abnormal immunoassay results do not necessarily imply the presence of THC, as any other agent in the specimen that binds to the antibody will result in a false-positive test. Also, the EMIT screen may test false-negative if a specimen is adulterated by the addition of bleach, detergent, salt, or vinegar or diluted with water from a tap or a toilet bowl.

Gas chromatography/mass spectrometry (GC/MS) is currently the most reliable confirmatory technique. In terms of analytic accuracy, EMIT-d.a.u. has a specificity in the range of 90% and a sensitivity in the range of 95%. GC/MS has a specificity of greater then 99.9% and a sensitivity of greater than 99.9%. Thus, a combination of screening by EMIT and confirmation by GC/MS will yield virtually 100% accuracy in testing for marijuana.

Marijuana testing as part of a well-designed program for the screening of employees and applicants for substances of abuse may help define the magnitude and seriousness of the problem and protect and improve health and safety in an ethically acceptable manner.

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Occupational Health Implications of a Toxic Spill of Propylene Dichloride

Given the enormous volume of potentially hazardous materials being transported, it is inevitable that clinicians will see patients who have been exposed as a result of accidental spills.

On February 5, 1981, a truck containing propylene dichloride leaked 2,000 gallons. Propylene dichloride is a volatile chlorinated hydrocarbon that is a mucous membrane irritant and a central nervous system depressant. As a result, hundreds of people were evacuated from their homes; 129 persons were treated at a nearby emergency department, 15 of these being admitted to hospital. The persons exposed included truck drivers who were also present at the site of the spill, two California Highway Patrol officers, 12 firefighters, and a number of hospital employees who were secondarily exposed as a result of contact with the victims' contaminated clothing. A number of those persons had persistent complaints.

Propylene dichloride and closely related materials have been used as soil fumigants for a number of years. Unfortunately, there have been previous incidents involving the accidental release of propylene dichloride or related materials in combination with other agents. Some of those exposed experienced a good deal of chest discomfort, dyspnea, and cough; of this group, some had persistent chest pain or discomfort and fatigue.

Physicians involved in treating workers exposed to such an accident or release face many challenges. A step-by-step approach for the management of these types of exposures has been outlined. Indeed, the emergency department experience of persons in the above-cited accident reinforces the need for advance planning for both examination and treatment. The treatment of patients who have inhaled irritant materials in general focuses on supportive management. This includes the use of oxygen, bronchodilators where important, and, in the view of some authors, the use of systemic steroids to minimize complications.

Hospitals are rarely well prepared to minimize exposure of their own personnel to chemical hazards. The hospital spokesperson in this circumstance indicated that the emergency room personnel wore caps and gowns. Surgical masks will be of minimal, if any, benefit in dealing with possible chemical inhalations. Hospitals might be well advised to have available in their emergency departments a number of respirators designed to protect against exposure to organic vapors. Personnel need to be trained in the use of respiratory protection.

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Reactive Airways Disease Syndrome

The reactive airways disease syndrome describes the development of airway hyperreactivity and asthmatic symptoms following a single exposure to a high level of pulmonary irritants. The syndrome differs from occupational asthma in several ways: First, it develops only with very high levels of exposure to materials that are directly irritating, whereas occupational asthma develops after repeated exposures to relatively low levels of sensitizing materials. Second, the reactive airways disease syndrome develops after only a single exposure, whereas occupational asthma depends on repeated exposures with sensitization. Third, while patients with occupational asthma have a particular sensitivity to the material causing the syndrome, such as toluene diisocyanate, patients with reactive airways disease are not peculiarly sensitive to the causative agent. Fourth, a large fraction of occupational asthma is caused by allergic sensitization, whereas this is not the case with the reactive airways disease syndrome.

The diagnosis of the syndrome is based on two factors: first, a history of exposure to a high level of a toxic material, and, second, the presence of airway hyperreactivity. Various toxic, nonsensitizing materials have been shown to cause reactive airways disease, such as sulfur dioxide and ammonia. In addition, we have observed its occurrence due to bromine and to products of plastic pyrolysis (burning plastic).

Airway hyperreactivity may produce intermittent dyspnea and wheezing. Although spirometry findings may be normal between exacerbations, airway hyperreactivity can be detected and objectively quantified by tests of airway hyperresponsiveness. Airway function is determined by spirometry (or whole-body plethysmography) as a baseline and after administering a placebo, such as a saline aerosol. Gradually increasing doses of the provocative agent are then inhaled, with airway function measured after each dose. An abnormal response—such as a 20% decline in the forced expiratory volume in one second—will not occur in normal persons. The test is safe to do because it is discontinued after the first abnormal response to the increasing doses; if necessary, an inhaled bronchodilator may be used to reverse the bronchospasm.

Symptoms developing after a heavy exposure in a previously asymptomatic patient suggest reactive airways disease. Treatment should be similar to that for asthma. Workers with the syndrome can have asthmalike symptoms and physiologic impairment years after the incident. The long-term prognosis is uncertain.

Reactive airways disease is specific for high-level exposures; low-level exposure to respiratory irritants has not been shown to produce the syndrome. In summary, the reactive airways disease syndrome is a new name for an old phenomenon. Despite improved industrial hygiene practices, accidental single episodes of high-level exposure unfortunately are still frequent. Physicians should counsel patients after such exposures to report any symptoms suggestive of asthma or respiratory impairment so that appropriate confirmatory testing may be done. In addition, clinicians should carefully question patients with adult-onset asthma about any acute exposure events surrounding the onset of their asthma.

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Passive Smoking and Lung Cancer

Active cigarette smoking has been amply shown to be the major cause of lung cancer. A dose-response relationship is seen with no apparent threshold, consistent with current biologic theory. Side-stream smoke, the smoke released from a burning cigarette tip, contains all the toxic and carcinogenic compounds in mainstream smoke, many of which are found in significantly higher concentrations in side-stream than in mainstream smoke. Studies of nonsmokers have shown that exposure to environmental tobacco smoke results in the uptake of tobacco smoke constituents. Thus, one would predict an increased lung cancer risk from such exposure.

Recent epidemiologic studies have now consistently shown an increased risk of lung cancer among nonsmokers exposed to environmental tobacco smoke. At least 13 studies from 6 countries have been reported, 11 of which found an increased risk of lung cancer among nonsmokers. The magnitude of the risk for the highest exposed groups has generally been in the range of twofold to threefold, but small sample sizes resulted in wide confidence limits for many of the estimates. The data on passive smoking have been reviewed in the Surgeon General's report, which found that "Involuntary smoking is a cause of disease, including lung cancer, in healthy nonsmokers." A recent review by the National Academy of Science also found that "exposure to [environmental tobacco smoke] increases the incidence of lung cancer in nonsmokers." For both of these reports the epidemiologic studies are critically reviewed and the conclusion made that errors in these studies did not negate the observed findings. The average increase in the lung cancer risk for nonsmokers exposed to environmental tobacco smoke is generally felt to be about 30% above the risk for nonsmokers without such exposure, or a relative risk of 1.3. This estimate is consistent with estimates based on low-dose extrapolation of active smoking risk models.

Many of the epidemiologic studies have considered only spousal smoking or home exposure as the source of environmental tobacco smoke, but some more recent studies have considered such exposure at work and have found that the workplace may be a significant source of exposure. For example, a study based on data from the Los Angeles County Tumor Registry found that workplace exposure to environmental tobacco smoke additionally increased the lung cancer risk observed from spousal smoking alone. This finding is not surprising, as some estimates are that exposure to environmental tobacco smoke in the workplace may, on an average, be four times that at home. In general, such exposures have been poorly estimated for the workplace, and further work is necessary in quantifying this important source of exposure.

In the 1980s we have seen increasing regulation of smoking in the workplace. Smoking has been banned in 35% to 40% of private businesses and in many government offices. Interestingly, actions to ban or regulate smoking in the workplace are supported by a large majority of both smokers and nonsmokers. As the trend to cleaner air at work continues, physicians (and companies) may see more reductions in smoking rates, with associated decreases in the health costs from active and passive smoking.

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Agricultural Health Hazards

Editor's Note: The following mini-review is also sponsored by the Advisory Panel to the Section on Occupational Medicine.

Agricultural work is demanding. Because the work is done outdoors and is invigorating, physicians may be unaware that agriculture has many health risks. The following occupations are included in this industrial group: farmers and farm managers; field workers or farmworkers (seasonal or permanent); pesticide mixers, loaders, and applicators; and greenhouse/nursery workers. In this review I will focus on the agricultural exposures that are linked with respiratory disease (farmer's lung), cancer of different sites, dermatitis, and accidental mortality.

Patients with farmer's lung present with allergic alveolitis usually after exposure to moldy hay or grain. The hay contains thermophilic microorganisms such as *Micropolyspora faeni* and *Thermoactinomyces vulgaris.* Inhaling the spores usually produces an acute bronchoconstriction that may include bilateral crackles, a positive antibody test for the suspected antigen, and reduced lung volumes and diffusing capacity. Prolonged exposure can produce a slowly progressive pulmonary fibrosis. Allergic alveolitis may also arise among agricultural workers involved with mushroom cultivation, barley malt production, cheese making, poultry handling and breeding, and fur processing. The Surgeon General reports that nonsmoking grain workers have about five times the prevalence of chronic bronchitis compared with nonsmoking controls; among grain workers who smoke, there is ten times the risk of bronchitis compared with nonsmoking controls.

Farmers and farmworkers smoke a third to a quarter less than all workers in the United States and generally have lower than expected risks for cardiovascular and cancer mortality. In particular, cancer sites related to cigarette smoking—that is, lung, kidney and bladder, and esophagus and larynx—show a consistently lower risk when compared with the general population. There appears, however, to be an association between farming occupations and cancers of the brain, prostate gland, skin, soft tissues, and the lymphatic and hematopoietic systems, including leukemia, Hodgkin's disease, lymphoma, and multiple myeloma. Explanations for the causes of brain and prostate cancer excesses are unclear. Nonmelanoma skin cancers, including cancer of the lip, are caused by a high exposure to ultraviolet light. The lymphatic cancers (and soft tissue sarcomas) among agricultural workers may be linked to exposure to chlorophenols and phenoxyacetic acid herbicides (that were contaminated with detectable levels of dioxin). In particular, in a 1986 study, non-Hodgkin's lymphoma (but not soft tissue sarcomas or Hodgkin's disease) had a sixfold odds ratio among Kansas wheat farmers exposed to 2,4-dichlorophenoxyacetic acid (2,4-D). The risk rose with the number of days exposed per year and was greater among those who mixed or applied herbicides directly. Pesticide applicators appear to have a slight lung cancer risk, but more studies are needed on this group of workers, especially those who have applied 2,4-D extensively.

Occupational dermatitis is highly correlated with the agricultural use of pesticides among farmworkers and among licensed mixers, loaders, and applicators. In California, a third to half of all cases of pesticide poisonings reported by physicians result in dermatoses, and there is a striking frequency of dermatitis among table grape workers compared with other agricultural crops. This result is not surprising given the high foliar contact and careful handling required in the harvesting of table grapes. The top three pesticides cited in California pesticide illness reports are propargite (Omite), elemental sulfur, and glyphosate (Roundup). There was a recent outbreak of chemical dermatitis affecting the necks and chests of 114 citrus workers from Tulare County, California, exposed to Omite-CR, a timed-release organosulfite miticide manufactured by Uniroyal. In addition to pesticide exposure, dermatitis may be related to crop contact, heat, preexisting atopic status, the presence of irritating weeds, or other factors. Organophosphate pesticide exposure can depress erythrocyte or plasma cholinesterase levels and can impair normal neurobehavioral function. Dibromochloropropane produces azoospermia among pesticide formulators.

The standardized mortality ratios (SMRs) of agricultural workers (farm supervisors, farmworkers, and nursery workers) aged 16 to 64 years who died between 1979 and 1981 were presented in the California Occupational Mortality study. The overall SMRs for white and black male agriculture workers was 166 and 250, respectively, both statistically significant. The causes of death contributing most to the overall risk among whites were falls and machinery accidents (SMR 380) and other accidents (SMR 310). Among black male agricultural workers, a similar SMR of 250 was reported for other accidents. These findings strongly suggest the need for improved safety designs for agricultural equipment and educational and interventional programs targeted at young male farm workers to lower the risks of accidental mortality.

In sum, new research and preventive programs are needed on cancer and pulmonary disease risks. Respiratory disease hazards are borne out by the significant risks for chronic obstructive pulmonary disease mortality among white and black male agricultural workers in the California Occupational Mortality Study report, with SMRs equaling 147 and 256, respectively. The occupational mortality study also reported that cirrhosis and other liver disease mortality was significantly elevated for white and black farmworkers (SMRs are 221 and 482, respectively), and the possible correlation with pesticide exposure should be examined. Pesticide exposures can be reduced by using integrated pest management methods, but given the current use patterns and regulatory climate, physicians will likely continue to see outbreaks of dermal and systemic poisonings such as the Omite-CR epidemic. New epidemiologic research combined with accident prevention programs is needed to preserve the health of agricultural workers.

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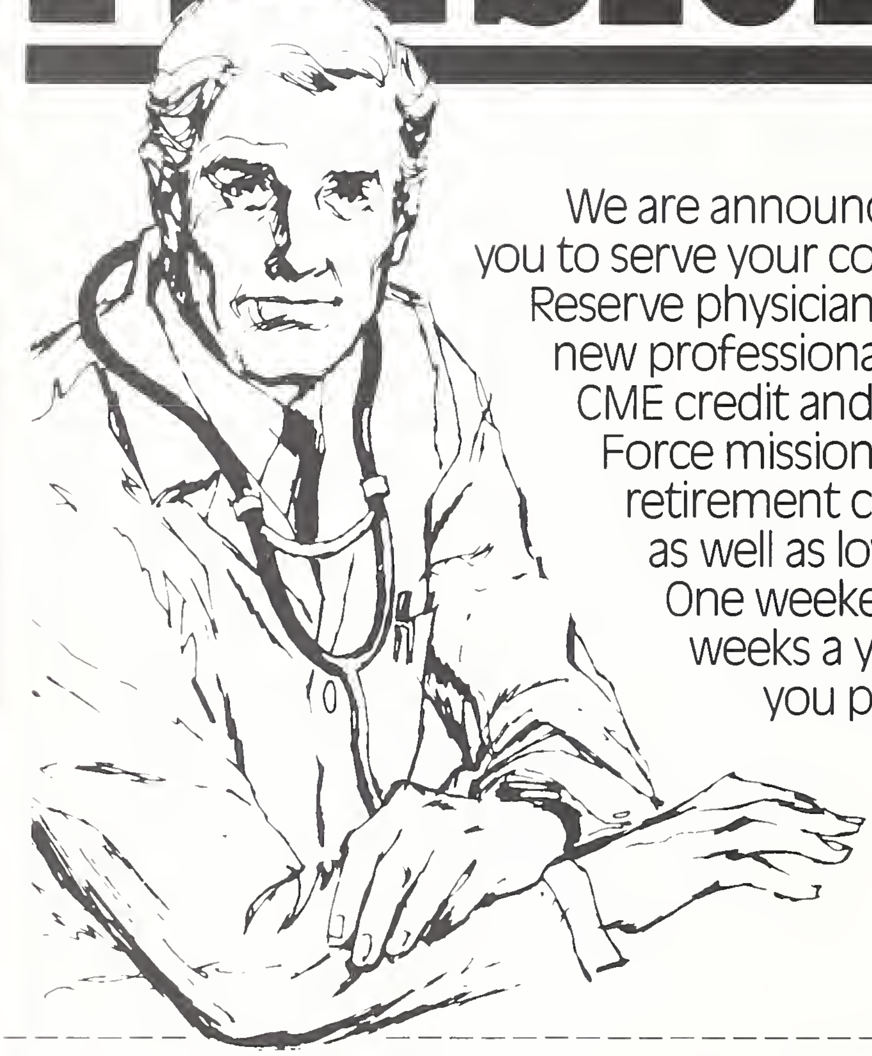

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The Doctor's Dilemma: Natural Scientist and/or Humanist?

ADRIAN C. MOULYN, M.D.

Natural scientists deal with nonliving matter. Doctors deal with living organisms. Our dilemma is how to apply the methods of natural science to sick human beings.

The doctor looks at and listens to a patient, he examines the various organ systems and laboratory data. Diagnosis rests to a large extent on perceptual data gathered by vision. The modern doctor will seldom make a diagnosis without relying mostly on x-ray examinations and other visually oriented studies of the patient. In fact, the primacy of the eye over hearing and other sensory modalities is responsible for the astounding progress in medicine and in surgery. The primacy of the eye enables us to apply mechanical, physical, chemical, and electrical techniques to the diagnosis of disease in the human organism.

I

Let me present a ground breaking experiment by Galileo.[1] He cut a groove in a plank and covered it with well-polished parchment, fastened one end of the plank with a hinge and leaned the other end of the plank on a fixture with which he could give the plank any inclination he wished. He took a well-polished metal ball and let it roll down over the entire length of the groove. He measured the interval of time during which the ball descended with a refinement of the ancient waterclock, the clepsydra. He drilled a small hole in the bottom of a bucket, soldered a narrow pipe into the hole and fitted the other end of the pipe with a very fine stopcock. He filled the bucket with water, opened the stopcock at the instant when the ball was released, and shut the stopcock when the ball arrived at the lower end of the groove. He collected the water which had been discharged during the descent of the ball in a glass beaker and weighed it with a sensitive balance. Galileo controlled the size of the force of gravity, the length of the trajectory of the ball in space, and the length of the interval of time during the descent. With these three numerical parameters he was able to express the laws that govern falling bodies in mathematical formulae.

Galileo enclosed these parameters in compartments with the aid of geometric points, punctiform instants,[2] and straight lines. He compartmentalized the force of gravity with the angle formed by the elevation of the plank from the horizontal, the distance of descent between the two geometric points of the elevated and the hinged end of the groove, and the time interval between the two punctiform instants in which he opened and closed the stopcock. The manipulation of compartmentalization of space and of time enabled Galileo to establish the laws that govern falling bodies.

II

Now let us look at two instances of a falling living organism, by comparing the movements which a diver executes during a successful dive with the movements he is subjected to when he bungles a dive. There he stands, back to the pool, close to the end of the diving platform, arms outstretched and nearly motionless. He is already diving in his imagination and planning the type of dive he will make. Suddenly he jumps, curls up, turns on his axis, stretches out, and plunges head first into the water. Now he looks back at his performance approvingly and he may go up again to improve it.

We could describe these movements with the same natural scientific methods that Galileo used to describe the falling metal ball. One could measure the exact length of the curvature of the diving movement by using a moving picture camera, and the time interval in fractions of a second with a stopwatch, and we could express these numbers in a mathematical formula. But is this mechanistic, natural scientific description of the dive adequate and complete? Obviously not.[3]

In a psychological sense the dive began before the actual movements started in a point-instant, and the dive did not end when the actual movement stopped in a point-instant. In fact, what happened before, in between, and after these two punctiform instants is precisely what makes it possible for the diver to make a successful dive.

The diver projects his movements constantly into his own, personal future before, during, and after the actual movements of the dive in between two punctiform instants. While he is preparing for his dive during the brief period when he stands with arms outstretched, almost motionless, he is condensing his memories of diving and swimming,

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This paper was presented in a somewhat different form as one of a series of lectures for the Program for Humanities in Medicine, Yale University School of Medicine, May 16, 1985 at the request of Howard M. Spiro, M.D.

which stretch back into his personal, private past, often over extended periods of time. During the actual dive he constantly monitors his body posture and movements and he adjusts them at each moment in accordance with his plan that he was projecting into the future just a few seconds ago. And while he is submerged and next, when he climbs out of the water, he judges retrospectively how the performed, now past dive has executed the planned dive which he projected into his future. Before, during, and after the dive he integrates his past with his future in his present. This process of synthesizing time defies the application of the punctiform instant and the geometric point, since such a process cannot be compartmentalized. The diver has performed a purpose-striving movement, which is a time-binding process interpenetrating in both time and space. It cannot be compartmentalized with punctiform instants and geometric points.

Now let us envision what happens when he bungles a dive. He assumes the same stance and again he is busily preparing in his imagination for what he is about to do. But for some reason or other he is distracted by something, makes a wrong move, and loses his balance. He falls in the water and he may land on his abdomen or on his back which causes him considerable pain. But over and above the physical pain he suffers from acute mental pain because he chastises himself for not living up to his expectations, those of his trainer, his peers, and his audience. He rushes immediately up to the diving platform in order to execute an intended dive properly.

In such instances of failure, gravity conquers the athlete instead of being controlled by him. He has fallen down like an object of nonliving matter. A diver who drops from the platform feels degraded to the level of any other body that has to obey the ubiquitous force of gravity. One is justified in regarding the dive that failed as a mechanical movement that starts in a point—instant and that stops in a point—instant; this movement one can compartmentalize.

III

From the viewpoint of natural science the successful dive is a mechanical movement. But from a more embracing viewpoint the dive is over and above a mechanical movement; it is a purpose-striving movement.[4] The successful dive brings about the infusion of purposiveness into mechanism. He synthesizes causality and intentionality by a process of integrating his private present, with his personal past, and his personal future. This time synthesizing process changes compartmentalized mechanical movement into interpenetrating purpose-striving movement. When two events interpenetrate with each other, one ends up with more than the summation of these two events. Each of the two interpenetrating partners brings about some change in the other, so that they are both different from the kinds of events they were before they interpenetrated.

I have composed two terms which I trust are of help to describe the process of interpenetration as it goes forward in time and space. They are *the mental triad,*[5] and *the precious present.*[6] I try to describe with the mental triad what happens within us when we perform purpose-striving activities, while the precious present describes how these activities proceed in time.

The mental triad consists of the central act, the condensation of memory images, and the projection of the act into the future. These constituents of the mental triad do not proceed in the before-and-after of objective time, but, to the contrary, they occur in subjective time. The precious present is the temporal ambience of the mental triad. The precious present displays the three constituents of a durational present which is its core, of a past fringe that reaches back into our personal past in an irregular fashion, and a future fringe which protrudes forward out of the durational present over a rather short range of objective time. The act finds its appropriate form of time in the durational present, condensation of memory images happens in the past fringe, while the act and condensed memories are projected into the future fringe. We do not in the mental triad first perform the feat of condensation, then subsequently become involved in the act, and then in turn project into the future fringe. The three constituents of the mental triad and of the precious present interpenetrate.

When we write about or discuss the problem of time we have to use language which is structured within the form of the before-and-after in objective time in irreversible order. But subjective time, represented by the precious present, has the characteristics of being present-within-past-within-future in contraposed backward and forward directions.

The mental triad and the precious present help us to understand what is going on within the diver when he is successful or when he fails. While he is standing on the platform he is acting out his intended dive in his imagination by projecting his dive into the future in the fringe of the precious present in which he is living, and he condenses his personal memories of swimming and diving in the past fringe. Suddenly all these activities come together as he acts in a durational present and takes off. If he is successful he feels uplifted, happy, powerful. The time-synthesizing process going on in the mental triad and the precious present is the source of the gratification we experience during and after successful purpose-striving activities. This is the reason why I have substituted the adjective "precious" for the adjective "specious."[6]

In contrast, when the diver bungles a dive, he feels disappointed, depressed, angry with himself, and impotent, since he has failed to accomplish the time-binding process of the mental triad and the precious present. In brief, the successful dive is a purpose-striving movement interpenetrating in a precious present and activated by the mental triad; the bungled dive is a mechanical movement causally structured and compartmentalized in objective time.

The contrasting temporal structures of these two modalities of movement compel us to follow two contrasting methods of observation. This turn of the discussion moves man the observer ever closer to the center in the humanistic tradition. These methods of observation are extrospection, introspection, and *intra-audition.* Extrospection relies chiefly on visual impressions in accordance with the primacy of the eye. It gets mechanical movement into view and aids the manipulation of compartmentalization. Introspection and intra-audition sharpen our awareness of our purpose-striving activities and their interpenetrating qualities since they are more aurally oriented. In order to get insight into our inner states and private events, we hold silent, imaginary conversations with ourselves. However, it is not the case that the outward bound and the inward turned methods of observation exclude each other. They are constantly going on in consort with each other.

The diver intends to alter mechanical movement into purpose-striving movement so that his successful dive goes on both in objective time and in a precious present. This dual temporal structure engenders his following both the outward bound route of extrospection and the inward turned method of introspection and intra-audition.

The natural scientist on the other hand, who deals with mechanical movement exclusively, occurring in objective time-space, works under the primacy of the eye so that he can compartmentalize and measure these phenomena.

IV

What does this interpretation of movement under the aegis of time have to do with the doctor's dilemma? A great deal, because the doctor is involved in both mechanistic events and with purpose-striving activities in his patients. On the one hand he is a natural scientist, on the other he is also a humanist. He tries to strike a balance between these two contraposed approaches to his patients. More specifically, either he sees his patient as a compartmentalized entity whom he observes by extrospection, or he may see him or her mostly as purpose-striving human beings with whom he communicates by introspection, intra-audition, empathy, identification, and projection. Some doctors may choose to be natural scientists, some may tend toward being humanists, but most doctors will fluctuate between these two attitudes toward their patients.

Medical education emphasizes the natural scientific methods as applied to the practice of medicine. We are taught to look objectively at our patients, meaning that the visual channel of perception is elevated to prominence.

The physician as a natural scientist compartmentalizes the patient's body into organ systems in which mechanical, electrical, chemical, and thermal events take place. These compartments are interconnected by neuronal, hormonal, and other controlling mechanisms which can be quantified.

Most patients present with complaints about pain. It is our task to pinpoint the cause of the pain. In the case of a painful, swollen ankle the answer comes easily: take an x-ray film and rule out or rule in a bone fracture. The treatment is determined by the results of the objective, visually oriented, compartmentalizing examination. If the x-ray film is negative, strap the ankle, advise the patient to take some aspirin, use an icebag, and spare the joint for a few days. In case of bone fracture, put on a cast. In this simplistic case the task before us is so clearcut that it is easy to overlook the patient's attitude toward his painful ankle. He too wants to know the cause of his distress, but he is also concerned with the meaning of the pain to himself, his job, his future.

If a physician cannot find the cause of a painful condition, he may refer his patient to a psychiatrist. The psychiatrist does not ask: What is the *cause* of the pain? but rather: What is the *meaning* of the pain to the patient? The psychiatrist does not interpret the pain as belonging to a compartmentalized subdivision of the patient's body, but as belonging to the patient as an interpenetrating whole. In psychotherapy and more so in psychoanalysis, extrospection is reduced to a secondary role and introspection and intra-audition take over on the part of the psychiatrist. Moreover, the patient has to develop and refine the introspective and intra-auditive attitudes toward himself.

The fundamental technique of psychotherapy and of psychoanalysis is to listen to the patient.[7,8] So do many other specialists listen to their patients, but they look primarily for causes and they think of their patients as existing only in objective time. The psychiatrist looks primarily for meanings and he sees his patients as goal-striving individuals who exist in subjective time.

The psychiatrist registers what feelings the patient harbors about himself and about others. But he has to be aware also of what kind of emotional reactions the patient engenders within himself in response to his verbal utterances as well as his bodily behaviors. Thus the techniques of introspection, intra-audition, and extrospection go on in consort. The psychiatrist's sensitivity to the patient's inner feelings by means of these inward and outward bound approaches is completed by empathy, identification, and projection.

The humanistic approach is contraindicated, for instance, during a surgical procedure. During an operation these humanistic stances are counterproductive and quite unscientific.

An anesthetist veers back and forth between the natural scientific and the humanistic attitudes. In the evening before the operation he visits the patient and tells him what to expect next morning in order to alleviate his preoperative apprehension. But in the morning, when he has anesthetized the patient he becomes purely a natural scientist. He activates mechanical, chemical, and electrical apparatus under the guidance of mostly visual recordings of several body functions. He approaches the patient as if he were a compartmentalized entity consisting of cohering organ systems and as if the patient existed only in objective time. When the patient is fully awake again, the anesthetist may shed the natural scientific approach and reestablish a humanistic rapport with him. The doctor's dilemma is how to conjoin the natural scientific with the humanistic approaches.

This is a formidable task which takes a great deal out of many physicians. We are bound to identify and empathize with the suffering patient. Some doctors may be capable of suppressing partly or entirely their empathy and identification with their patients; others will be excessively strained by over empathizing and by unbridled identification; and some will find a balanced attitude between the natural scientific and the humanistic approaches to their work.

Our most demanding task is to delay the advent of death. If this is impossible we try to help the patient to face this fracture in the human existence courageously. We see and hear and sense the dread of death in the terminally ill patient. Identification and empathy make us aware of our own mortality and of our own dread of our personal, inevitable death.[9]

It is precisely at this most frightening crossroad in human existence that the natural scientific method is impotent. This is the dividing line where humanism, or philosophy, or religion, or the arts can give solace to the physician who is caught in the dilemma between natural science and humanism.

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AIR FORCE

Le Mot Juste

HENRY SCHNEIDERMAN, M.D.

We were sitting in a meeting of the Introduction to Clinical Medicine (Physical Diagnosis) Committee. A new text had been proposed for the students to use in history-taking, Coulehan's *The Medical Interview.* Our Dean of Students browsed through it, and at the end found an appendix entitled "Some Adjectives to Describe Feelings." He plaintively remarked, "I wish I had some adjectives to describe medical students' performance." I mulled over this question. Certainly the majority of deans' letters from all medical schools are indistinguishable. There is one exception: the institutional signature. For example, about a dozen schools routinely describe individuals as "attractive," and the others don't. (Does this physical attribute correlate with compassionate, intelligent practice of medicine?) One winds up looking between the lines of letters of recommendation, because the content is bland. Why do we write interchangeable evaluations? Not only because of the universal reluctance to confront negatives, but also to avoid souring any student's chances and, I suspect, to protect against future litigation from students who do not place where they wish.

The profession has a serious problem in communicating our students' performance in writing. For example, a concerned preceptor telephoned a course director three times to express growing concern that a student's particular shortcomings impaired his interactions with patients, yet at the end of the rotation this preceptor never mentioned the unallayed problem in his report. He lacked the will to commit his important observations to paper.

None of us wishes to wreck a career or a life with careless criticism, nor to inflict misery. Yet we must detect flaws, describe them, communicate this information sensitively, and thereby help to serve the welfare of patients above all else. Beyond the role of improving every trainee's performance, there are the "serious cases." After their faults are explicated, they can rise to acceptability, or can enter a different profession whose demands will better match their strengths.

If we are to reverse the loss of charity in the practice of medicine,[1] and the growing sense of entitlement,[2] our students require support, and they deserve it. How are we to describe fairly, for both prospective program director and student, those in the bottom third of the class? To label students as such is considered the kiss of death. The old class-rank system probably does not deserve revival, but we need means to characterize attitudes, behavior, and efficacy that will meaningfully prognosticate future performance. Studies to date have failed to identify solid predictors, so we lack not only the words but also the concepts. Further research is urgently warranted. Meantime, we can call things as we see them, ie, include negatives as well as positives in all letters of recommendation, and append a sentence if necessary confirming that nothing lurks beneath the surface. Thus, we would refuse to accept the debasement of language. Individual comments on weaknesses would no longer be read as the "tip of the iceberg" condemning their subject, but rather as the balanced evaluation that follows sufficient observation of any trainee.

We also need to keep perspective and humor, and so I prepared the following response to the Dean's wish.

Student's Performance, Percentile	*Descriptor*
99	Magnificent
98	Superlative
93	Extraordinarily strong
88	Notable
83	Wonderful
80	Terrific, radiant, and humble[3]
78	Accomplished
75	Nonsteroidal anti-inflammatory
70	Well read
65	Capable
60	Intermittent
55	Well above the mean
50	Strong
45	Hearty
40	Friendly
35	Well groomed
30	Attentive and respectful
25	Pleasant
20	Punctual
15	Imminently about to blossom
12	Present and fully continent of all excreta
10	Normocephalic and nonfelonious
8	Claudicative
6	English speaking
5	Ambulatory
3	Respirating and well perfused
1	Charmingly fresh in outlook
0	Eukaryotic and possibly diploid

The work of evaluation requires attention to justice and precision. We will do it best with jaws unclenched and with muscular language that is not kept in a cage.

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Magnetic Resonance Imaging

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Introduction

Magnetic resonance imaging (MRI) is a new and innovative technique that affords anatomic images in multiple planes and may provide information on tissue characterization. The first magnetic resonance image was published in 1973 by Lauterbur. Since that time, major technological advances, together with increasing clinical and investigative interest in the method, have been accompanied by the development of equipment that is now clinically applicable to man, with potentially great benefits in assessing pathophysiologic states.

The MR images are obtained by placing the patient or area of interest within a powerful, highly uniform, static magnetic field. Magnetized protons (hydrogen nuclei) within the patient align like small magnets in this field. Radiofrequency pulses are then utilized to create an oscillating magnetic field perpendicular to the main field, from which the nuclei absorb energy and move out of alignment with the static field, in a state of excitation. As the nuclei return from excitation to the equilibrium state, a signal induced in the receiver coil of the instrument by the nuclear magnetization can then be transformed by a series of algorithms into diagnostic images. Images based on different tissue characteristics can be obtained by varying the number and sequence of pulsed radiofrequency fields in order to take advantage of magnetic relaxation properties of the tissues.

Magnetic resonance images differ from those produced by x-rays: the latter are associated with absorption of x-ray energy, while MR images are based on proton density and proton relaxation dynamics. These vary according to the tissue under examination and reflect its physical and chemical properties.

In order to resolve issues regarding safety and efficacy, the Warren Grant Magnuson Clinical Center and the Office of Medical Applications of Research of the National Institutes of Health (NIH) convened a consensus conference on MRI on October 26, 27, and 28, 1987. The conference was cosponsored by the Division of Research Resources, the National Cancer Institute, the National Heart, Lung, and Blood Institute, the National Institute on Aging, and the National Institute of Neurological and Communicative Disorders and Stroke of the NIH; the Food and Drug Administration (FDA); and the National Institute of Mental Health.

At NIH, the Consensus Development Conference brings together investigators in the biomedical sciences, clinical investigators, practicing physicians, and consumer and special interest groups to make a scientific assessment of technologies, including drugs, devices, and procedures, and to seek agreement on their safety and effectiveness.

During the first day-and-a-half of the meeting, a Consensus Development panel and members of the audience heard evidence presented on the following questions:

- Are there contraindications to or risks of MRI?
- What are the technological advantages and limitations (disadvantages) of MRI?
- What are the clinical indications for MRI, and how does it compare to other diagnostic modalities?
- What are the directions for future research in MRI?

Members of the panel included representatives of internal medicine, neurology, neurosurgery, radiation oncology, radiology, clinical epidemiology, surgery, the law, and the hospital community.

The invited speakers included physicists, biomedical scientists, reproductive scientists, and radiologists with extensive experience in MRI in all of the subspecialties of the field.

1. Are There Contraindications to or Risks of MRI?

MRI is generally safe when used in accordance with the performance characteristics approved by the FDA. Risks are primarily related to the static and oscillating magnetic fields used in MRI. These fields are capable of producing adverse biologic effects at a sufficiently high exposure, but effects have not been observed at the levels currently employed in clinical practice.

The most important known risk is the projectile effect, which involves the forceful attraction of ferromagnetic objects to the magnet. Caution also must be exercised when there are ferromagnetic objects embedded in the patient, such as shrapnel, or implants such as pacemaker wires.

From the Office of Medical Application of Research, National Institutes of Health, Bethesda, Md.

Reprint requests to the Office of Medical Applications of Research, Room 216, National Institutes of Health, Bethesda, MD 20205 (Michael J. Bernstein).

MRI should not be performed on patients with cardiac pacemakers or aneurysm clips.

Biologic effects of static magnetic fields, such as ECG changes in T wave amplitude and magnetohydrodynamic flow effects, are transient. In the short-term studies reported thus far, these do not appear to be hazardous at field strengths below two tesla. A preliminary case-control study of male workers exposed to magnetic fields has shown no trends indicating a dose-response effect, but the number of subjects was small and the followup period short.

Rapidly changing gradient fields can induce electric currents in conductive tissues. Recent studies indicate no interference with cardiac function or nerve conduction at two to seven tesla. The exposure levels approved by the FDA, which are below those that would induce neuromuscular stimulation, are believed to provide a wide margin of safety in this respect.

Heating may occur in tissues as a result of resistive losses due to circulating currents from radiofrequency coils. High-field scanners are more likely to cause measurable temperature elevations than low-field devices. Although no adverse effects have been observed at FDA-approved absorption rates, care must be taken with patients whose heat loss mechanisms are impaired and with hyperpyrexic individuals. Pulse sequences should be modifieid to prevent excessive heat buildup, particularly in warm and humid environments.

Caution must be exercised in the MRI examination of infants, patients requiring monitoring and life-support systems, and patients who are pregnant. Although there is no evidence that magnetic and electric fields associated with MRI interfere with human development, *in vitro* studies and theoretical predictions raise the question of whether exposure might pose risks to the developing embryo and fetus. Therefore, MRI, as with all interventions in pregnancy, should be used during the first trimester only when there are clear medical indications and it offers a definite advantage over other tests.

2. What are the Technological Advantages and Limitations (Disadvantages) of MRI?

Advantages

MRI provides information that differs from other imaging modalities. Its major technological advantage is that it can characterize and discriminate among tissues using their physical and biochemical properties (water, iron, fat, and extravascular blood and its breakdown products). Blood flow, cerebrospinal fluid flow, and contraction and relaxation of organs, both physiologic and pathologic, can be evaluated. Because calcium emits no signal on spin echo images, tissues surrounded by bone, such as the contents of the posterior fossa and the spine, can be imaged, and beam hardening artifacts are avoided. MRI produces sectional images of equivalent resolution in any projection without moving the patient. The ability to obtain images in multiple planes adds to its versatility and diagnostic utility and offers special advantages for radiation and/or surgical treatment planning. Excellent delineation of anatomic structures results from inherent high levels of contrast resolution.

Para- and superparamagnetic contrast agents, which appear to be relatively nontoxic, will soon be available in the United States. These agents should permit evaluation of the integrity of the blood-brain barrier, the reticuloendothelial system, and the extracellular space.

MR image acquisition does not use ionizing radiation, nor does it require iodinated contrast agents. Because it requires little patient preparation and is noninvasive, patient acceptability is high.

Disadvantages

The relatively slow scan acquisition time results in artifacts due to biological (physiological) motion, eg, cardiac, vascular, cerebrospinal fluid pulsation, respiratory excursion, and gastrointestinal peristalsis. Technological advances now evolving, such as cine MRI, improved surface coils, respiratory, cardiac, and peripheral gating, chemical shift imaging, and fast scanning (gradient refocused images), may resolve many of these problems. Some patients, particularly acutely ill patients, cannot cooperate and movement artifacts result. Patient throughput is slow compared with other imaging modalities.

Because of the small bore of the magnet, some patients experience claustrophobia and have difficulty in cooperating during the study. Some obese patients cannot be examined.

The strong static magnetic field, which interferes with the proper function of the usual life-support equipment, and the small bore of the magnet make it difficult or impossible to examine some critically ill patients. Patients with pacemakers and ferromagnetic appliances cannot be studied. MRI units require careful siting and shielding.

While the appearance of calcium as a signal void provides some advantages, it also limits the ability to detect pathological calcification in soft tissues and tumors, and pathological changes in cortical bone are poorly depicted, using routine spin echo techniques. Other imaging sequences may permit visualization of some of these lesions.

Presently, contrast agents to enhance the MR images are not approved for general use in the United States. Greater technological expertise is required for utilization of MRI than for most other imaging modalities. These factors limit the present application of MRI.

MRI equipment is expensive to purchase, maintain, and operate. Hardware and software are still being developed.

3. What are the Clinical Indications for MRI, and How Does it Compare to Other Diagnostic Modalities?

MRI is an evolving technology that in most instances has been evaluated by small descriptive studies rather than by large, carefully designed, prospective studies. Some of our judgments about the role of MRI relative to other imaging modalities are based on less rigorously designed studies than are desirable. For those clinical situations where MRI can potentially replace other procedures, especially invasive ones, these judgments should be verified by additional prospective studies. Furthermore, when other new, costly, or invasive imaging modalities are introduced in the future, considerable attention should be paid initially to the types of clinical problems that should be studied first, to the need for single or multi-institutional studies, to the timing of the evaluations, to the requirements for interpretive expertise, and to the potential sources of funding for such evaluations. A consensus conference might be a suitable vehicle for such deliberations.

The panel took the position that the diagnostic capability of MRI relative to those of its competing modalities was the most important endpoint to be assessed at this time. It should be recognized that an experimental approach that optimizes the attainment of diagnostic information cannot readily provide simultaneous information on the effect of MRI on other indices such as patient management and patient outcomes. Finally, it deserves emphasis that the panel focused on clinical efficacy and not on cost considerations.

The Brain

Brain Tumors

MRI is a superb method of studying brain tumors because of the excellent contrast resolution, easy multiplanar imaging, and absence of artifacts. MRI and CT are roughly equivalent for detection of most brain tumors. Because of the absence of bone artifacts, as seen on CT, MRI is superior at the vertex, in the posterior fossa, near the walls of the middle fossa, at the base of the skull, and in the orbit. CT is superior to MRI for detection of meningioma but requires contrast enhancement. MRI performance will be improved further by the use of contrast-enhancing agents.

Gliomas and Metastases. Supratentorial gliomas and metastases are detected by either MRI or CT. Secondary effects of the tumor, such as herniation, hydrocephalus, and volume displacement of adjacent tissues, are displayed well with both CT and MRI, although more anatomic information is available with multiplanar MRI. Tumor boundaries in gliomas and metastases may be obscured by extensive edema. Contrast-enhanced CT currently is better than unenhanced MRI for defining the gross margin between tumor and edematous brain. Neither method is definitive in establishing a tissue diagnosis. Calcification is better seen with CT. Contrast-enhanced CT better demonstrates subarachnoid spread from malignant tumors than MRI. MRI is especially effective in the demonstration of intratentorial tumors.

Meningiomas. The characteristic hyperdense appearance of these tumors on contast-enhanced scans and the hyperostosis of underlying bone allows superior detection by CT. MRI may provide more information than CT about the effect of the tumor on adjacent structures.

Acoustic Neuromas. MRI demonstrates smaller tumors better than CT, without the need for intrathecal air or contrast material, but larger tumors are well visualized by both CT and MRI.

Pituitary Tumors. Both MRI and contrast-enhanced CT are effective in defining pituitary tumors, but MRI may provide more information about the precise extent of the lesions and their effect on adjacent structures. Early studies suggest that MRI may be superior for detection of intrasellar microadenomas. MRI appears to be somewhat better in the diagnosis of some other suprasellar tumors, primarily because of its multiplanar capabilities and the absence of bone artifacts.

Reexamination. The factors that dictate the use of MRI or CT as the original detection tool also apply to followup studies.

Nonneoplastic Disease

Any insult to the structural integrity of the brain associated with alteration in water content or myelin can be reflected in abnormal signal intensity on MRI. Thus, MRI is sensitive to the detection of a wide variety of nonneoplastic processes affecting the brain. In many instances, the sensitivity of MRI exceeds that of CT.

Ischemia. Within a few hours after vascular occlusion, detection and localization of cerebral infarction is possible with MRI, while CT (even with contrast enhancement) often yields equivocal or negative results in the first 24 to 48 hours. In the subacute and chronic stages of stroke, MRI and CT provide equivalent information.

Hemorrhage. Within the first 24 to 48 hours, acute intracranial hemorrhage, whether subarachnoid, intraparenchymal, or subdural, is not easily detected with MRI but is more reliably demonstrated on CT. The subacute hematoma (age ten to 20 days) is readily detected on MRI, while it may be much less conspicuous on CT. Thus, the two modalities have complementary roles in detection of hemorrhage—CT is more sensitive in acute hemorrhage, while MRI is more sensitive in subacute hemorrhage. Unenhanced CT is often the preferred initial study in patients with stroke because of the clinical need to determine the presence of hemorrhage.

Arteriovenous Malformations. MRI is exquisitely sensitive to flowing blood and has proven particularly effective in the detection and localization of vascular malformations, including some "cryptic" malformations not evident on cerebral arteriography. Arteriography remains necessary for the pretherapeutic assessment of symptomatic malformations.

Trauma

In head trauma, MRI has proven useful in the detection of all types of intracranial hemorrhage, including hemorrhagic contusions and shearing injuries. During the first one to three days after injury, however, CT is preferable not only because examination time is shorter but also because hemorrhage at this time is more reliably demonstrated by CT.

Disorders of Myelination

Diseases associated with demyelination or dysmyelination are readily detected with MRI. MRI is recognized as the preferred and most sensitive imaging technique for the diagnosis of multiple sclerosis (MS), but MRI alone cannot establish a definite diagnosis of MS in the absence of strong clinical findings. MRI also exhibits greater sensitivity in the detection of radiation injury to the brain than does CT. However, in the followup of patients after radiation therapy or chemotherapy for malignant intracranial neoplasm, neither MRI nor CT permit differentiation of late radiation injury from recurrent tumor.

Dementia

The diagnosis of dementia requires a clinical neurological evaluation. In the assessment of dementia, either CT or MRI can be used to demonstrate remediable lesions. MRI demonstrates more lesions than CT in patients with multi-infarct dementia. In older individuals, however, often without dementia, MRI also demonstrates high signal areas in white matter on T2-weighted images of uncertain clinical significance.

Infection

MRI demonstrates areas of cerebritis and abscess formation in a manner similar to CT. White matter edema associated with inflammation is readily detected by MRI and may allow earlier initiation of specific treatment in certain illnesses such as herpes simplex encephalitis.

Head and Neck

In the detection, localization, and treatment planning of head and neck tumors, MRI offers an advantage over CT due to its multiplanar capabilities, tissue characterization potential, and the absence of bone and teeth artifacts. MRI affords ready distinction of vessels from lymph nodes. MRI also depicts the contents of the orbit.

The Spine

Surface coils constitute an integral part of the MRI examination of the spine.

Tumors

MRI of the spinal canal has the advantage over myelography of direct, noninvasive visualization of the spinal cord rather than merely outlining its margins. MRI is capable of demonstrating the entire spinal cord and of differentiating solid from cystic intramedullary tumors. Indications for myelography have decreased considerably, and it may become obsolete in the future with the wider availability of high-quality MRI. An example of this is the use of MRI for the diagnosis and localization of acute spinal cord compression. Intradural extramedullary tumors are best demonstrated by MRI or myelography.

Syringomyelia

MRI is the diagnostic method of choice and is considered to be superior to both myelography and CT.

Degenerative Disc Disease

MRI is equivalent to CT myelography in the evaluation of herniated disc at the cervical and thoracic levels and is as good as or better than myelography. At the lumbar level, MRI is better than or equal to CT and is more accurate than myelography. In spinal stenosis, MRI and CT are roughly equivalent in diagnostic information and less invasive than myelography. CT myelography provides the greatest diagnostic accuracy for cervical radiculopathy due to hypertrophic degenerative changes.

Trauma

When the patient's condition allows, MRI demonstrates the altered relationship between vertebral bodies, discs, spinal cord, and nerve roots. It is less applicable to the study of spinal stability and the integrity of articular facets than CT or conventional radiography.

Congenital Disorders

Spinal cord abnormalities associated with congenital spinal dysraphism are most advantageously studied by MRI.

Infection

MRI and radionuclide scans are more sensitive than CT for the early detection of osteomyelitis.

The great accuracy of both MRI and CT in defining spinal anatomical changes poses a particular challenge to clinicians. Correlative clinical studies to relate these changes with patients' symptoms and outcome of therapy are urgently needed.

The Cardiovascular System

MRI is particularly valuable as a technique for imaging the heart and great vessels because flowing blood produces a unique signal. Therefore, no contrast medium is required to define the cardiac chambers and the lumen and location of the great vessels. Cardiac evaluation requires either ECG gated MRI or cine MRI.

Ischemic Heart Disease

At the present time MRI has limited usefulness in evaluating ischemic heart disease. It cannot substitute for coronary arteriography in defining coronary artery anatomy. It apparently can delineate infarcted myocardium and adjacent residual viable myocardium. With paramagnetic contrast media it may be possible to define regions of acute ischemia. Gated MRI can be used to delineate scarring caused by previous infarction, ventricular aneurysm, and chamber thrombi.

Cardiomyopathies

Gated MRI defines the endocardial and epicardial surfaces, making it possible to determine mural and septal thickness, ventricular volume, and performance. Two-dimensional echocardiography and radionuclide techniques provide information similar to MRI.

Valvular Heart Disease

The recent development of cine MRI, which permits rapid dynamic imaging, makes it possible to evaluate ventricular performance and to estimate the severity of valvular regurgitation. The relative values of 2-D and Doppler echocardiography, other noninvasive methods, and the cine MRI technique have yet to be determined.

Pericardial Disease

Gated MRI is being used to evaluate pericardial disease, but echocardiography remains the procedure of choice because of lower cost, portability, and availability.

Intracardiac and Paracardiac Masses

MRI depicts the pericardium, cardiac chambers and walls, and the great vessels in the mediastinum. For imaging of intracardiac and paracardiac masses, MRI appears to be superior to CT, although echocardiography remains the primary screening procedure for intracardiac masses.

Congenital Heart Disease

MRI, through definition of the cardiac chambers, great vessels, and flow patterns, represents an important noninvasive diagnostic imaging method in congenital heart disease. Because of the relatively long times required for MRI, ECG gating or cine MRI is important to optimize its value. Gated MRI is capable of defining many malformations of the cardiac chambers and the great vessels, such as transposition and pulmonary atresia. Two-D and pulsed Doppler echocardiography continue to be the primary initial screening techniques and provide information on pressure and flow in addition to cardiac anatomy.

Aorta

While CT has served as a screening method in aortic dissection, the anatomic findings required for surgery have been determined primarily by angiography. MRI permits visualization of the aortic root and detects intramural hemorrhage, wall separation, and intimal flap. It may improve the screening of suspected cases, but it is uncertain that it will obviate the need for contrast angiography. It permits the distinction between aortic dissection and aneurysm of the thoracic and abdominal aorta. CT scanning has been accurate in delineating aortic size, change in aneurysm dimensions, and aortic aneurysmal bleeding. MRI has a similar potential.

Thorax

Staging of Bronchogenic Carcinoma

MRI is comparable to CT in diagnosing mediastinal adenopathy. The current interpretive criteria for MRI (as based on node size) are derived from and are identical to those used for CT. MRI is superior to unenhanced CT, however, in evaluating hilar masses, and is equivalent to enhanced CT. Because CT can evaluate the mediastinum and the upper abdomen as well as the lungs and abdomen as part of one examination, it is currently the method of choice for staging bronchogenic carcinoma.

Evaluation of Mediastinal Masses

MRI, because of its multiplanar imaging potential, provides information for determining the anatomic relationship between mediastinal masses and the great vessels that is not always available with CT.

Evaluation of Parenchymal or Hilar Masses

CT is used for the detection of pulmonary nodules. In solitary pulmonary nodules, CT is preferred to MRI for assessing benignity. Because of the ability of MRI to visualize flowing blood, it is preferred to unenhanced CT for determining whether hilar or parenchymal masses are solid or vascular.

Liver

MRI is equivalent to contrast-enhanced CT in the detection of patients with metastases to the liver from carcinoma. The use of iodinated contrast agents may be avoided with MRI. Cysts and hemangiomas, two common benign lesions, are relatively well characterized by MRI.

Pancreas and Spleen

For evaluating lesions of the pancreas and spleen, CT is superior to MRI.

Kidney

Renal Masses

In detecting renal masses, MRI is apparently equivalent to CT, with specific limitations noted below. Cysts and angiomyolipomas can be characterized as with CT, and complicated cysts, containing hemorrhage, can be identified.

Benign tumors can be visualized but not reliably distinguished from malignant neoplasms.

Malignant tumors are identified and staged as with CT, but the limited ability of MRI to detect calcifications and define small tumors is a drawback. MRI is useful for demonstrating vascular invasion.

Thus, MRI may be used in selected cases when CT examination is equivocal or when iodinated contrast material is contraindicated.

Renal Transplants

The normal corticomedullary junction of the kidney is demonstrated with MRI. When the junction is not visualized, the diagnosis of graft rejection can be suggested. Although MRI is useful, Doppler ultrasound appears to be more sensitive and specific.

Adrenal Gland

MRI is equal to high resolution CT in visualizing the normal gland and in detecting lesions such as hyperplasia, adenoma, aldosteronoma, pheochromocytoma, and primary carcinoma, as well as metastasis. Pheochromocytomas have an MRI intensity pattern that seems to be characteristic. Furthermore, the diagnosis can be made without using contrast agents, to which patients sometimes react. Other lesions cannot be reliably characterized.

Female Pelvis

The uses of MRI in gynecologic disease are in the early stages of investigation, but the ability of the examination to depict anatomy in three orthogonal planes affords a potentially useful method of staging tumors and selecting and planning the treatment to be employed. MRI is not a screening modality and does not permit specific tissue diagnoses.

The application of MRI in high-risk obstetrical practice requires further exploration.

Carcinoma of Endometrium

MRI shows promise as a means of staging as compared to physical examination or CT. The choice of therapy may depend on tumor volume, site, and depth of myometrial invasion, all of which can frequently be demonstrated by MRI.

Carcinoma of the Cervix

The value of MRI in staging cervical carcinoma lies in its ability to demonstrate the tumor directly, to calculate its volume, and to evaluate extension to adjacent organs accurately. Although useful for staging in selected cases, it has no apparent advantage over CT in the detection of lymph node metastases.

In both endometrial and cervical carcinoma, the capacity of MRI to depict concomitant pelvic lesions adds to its value.

Male Pelvis

Prostate

While it does not permit reliable differentiation of prostatic carcinoma from benign prostatic hypertrophy, MRI represents a promising method for staging the extent of carcinomatous spread outside the capsule of the prostate gland and appears to be equivalent to CT in this regard. Metastases to regional lymph nodes appear to be detected by MRI and CT with equal efficacy.

Bladder

In staging bladder carcinoma, MRI cannot distinguish mucosal lesions from those with superficial muscular invasion, but it is effective in staging tumors that have invaded the deep muscle layers, the perivesical fat, and adjacent organs and lymph nodes. While no large prospective studies comparing MRI with CT are available, preliminary data indicate that tumor staging with MRI is as accurate as with CT.

Scrotum

In the scrotum, MRI permits distinction of intratesticular from extratesticular lesions. It appears to have no diagnostic advantage over ultrasound, except when examining the painful scrotum.

Rectum

The staging of rectal neoplasms as well as the differentiation of recurrent tumor from fibrosis in the rectal wall represent problems that require further study.

Musculoskeletal System

Surface coils are essential for adequate examination of many areas in the musculoskeletal system.

Joints

MRI demonstrates the articular cartilages as well as adjacent muscles and tendons. Because it is noninvasive, MRI may be preferable to arthrography and arthroscopy in the study of the knee. It is also useful for evaluation of the temporomandibular joint. The use of MRI in the examination of other joints requires further evaluation.

Marrow Space

MRI reflects changes in the marrow space by primary tumors and infection. The local extent of primary bone tumors can be staged best by MRI. Metastatic tumor can be demonstrated with MRI, which apparently is more sensitive than radionuclide bone scanning.

Aseptic Necrosis of Bone

MRI is superior to radionuclide imaging in the detection of the early changes. Preliminary data suggest that MRI is better than CT.

Soft Tissue Tumors

MRI provides important information regarding muscle, nerve, and vessel invasion or entrapment in malignant soft tissue tumors. A postoperative baseline MRI study can be helpful when the possibility of recurrence must subsequently be evaluated.

Trauma

Because of the excellent contrast resolution of soft tissues, MRI demonstrates muscle and ligament tears and hematomas well. This may be useful in following the evolution of these lesions.

Contrast Media for MRI

Contrast agents are currently being evaluated in laboratory and clinical studies. These agents, by altering inherent tissue response to magnetic fields, offer the promise of even greater sensitivity for detection and improved lesion characterization. They fall into two classes: *paramagnetic* materials, which have diagnostic properties similar to iodinated radiographic contrast agents, and even more potent *superparamagnetic* materials, which have a wide area of effect. Gadolinium (Gd) DTPA appears safer than iodinated contrast media.

Intravenous infusion of Gd-DTPA demonstrates breakdown of the blood-brain barrier on T1-weighted MRI studies, and such images permit improved definition of gross margins of tumor, abscess, or infarct. Outside the brain, the use of contrast-enhanced MRI may identify areas of altered circulation due to inflammation, other soft tissue injury, or neoplastic spread.

4. What are the Directions for Future Research in MRI?

The role of MRI in the management of the patient needs to be defined. What does it replace in existing diagnostic algorithms? To what is it complementary? For example, will the need for CT, ultrasound, and arteriography decrease? How does the information provided affect diagnosis, staging, therapy, and patient outcome? The answers to these questions will require well-designed and well-conducted studies comparing the efficacy of MRI with existing diagnostic techniques.

Positron emission tomography (PET) can spatially image metabolic processes. To what extent is MRI capable of fulfilling a similar function in regard to pH, blood flow, blood volume, and the metabolism of oxygen and glucose? Similarly, PET has been used to study neurotransmitters and their receptors; can MRI be applied for this purpose not only to the central nervous system but also to different membrane receptors in other organs?

Diagnostic imaging is concerned with detection, localization, and tissue characterization. MRI has been shown to be effective for all three but offers special promise for tissue characterization. Future potential for MRI includes nonproton imaging, for example, phosphorus and sodium. The combination of imaging with localized *in vivo* spectroscopy may yield fundamental information regarding the metabolic status of a particular organ or lesion. For example, phosphorus metabolite concentration may be measurable as a reflection of the state of oxygenation of the myocardium or of tumors. *In vitro* spectroscopy offers a method for examining biologic material of various types, for example, tissue fluids, pathologic specimens, and cells in culture.

Further exploration of the applications of MRI to the vascular system is required. It appears to have promise as a means of assessing peripheral venous disease noninvasively.

Although considerable development of equipment for MRI has occurred, there appear to be opportunities for enhancing both hardware and software. Improving the techniques of MRI includes the selection of the appropriate energy of the magnet, optimization of the magnetic field strength in use, the fabrication of efficient surface coils, the evaluation of new pulse sequences, and the development of computer software leading to the richer utilization of the available data.

Gadolinium DTPA has promise as a contrast agent for MRI. There should be an active search for and an evaluation of other classes of contrast agents applicable to MRI. Paramagnetic labeled pharmaceuticals and monoclonal antibodies offer new opportunities for acquiring anatomic, physiologic, and pharmacologic information. For example, there are disorders characterized by qualitatively or quantitatively abnormal receptor sites that would lend themselves to study using these agents.

It appears that MRI is a safe modality for imaging. Nevertheless, there must be continuing investigation of its secondary effects such as local heating of tissues. This is necessary as higher field strengths and rapid imaging techniques are more widely utilized. There is a need for long-term studies of the potential somatic and genetic effects of magnetic resonance. These should consider not only the patient but also those individuals exposed occupationally.

Conclusion

MRI is an innovative technique that provides images of the body in many different planes and represents an extraordinary addition to our diagnostic armamentarium. The images generated vary according to the tissues examined and reflect their physical and chemical properties. It is noninvasive, appears to be relatively innocuous in clinical application, and involves no exposure to ionizing radiation.

Even in the short period of its use, it has proved to be unusually rewarding in the detection, localization, and assessment of extent and character of disease in the central nervous, musculoskeletal, and cardiovascular systems. In the brain, for example, it has a proven capacity to define some tumors and the plaques of multiple sclerosis provided by no other technique. It is a competing imaging method in the evaluation of many other organs. Additional prospective studies comparing MRI with other diagnostic methods are essential in those areas where the method has shown promise but where its precise role has not yet been defined. This consensus development conference does not purport to include all of the applications of MRI to the pediatric patient, a subject that will require separate consideration.

Although MRI can be used without contrast media, the information it generates can be augmented by contrast agents now being introduced.

The full potential of MRI has not been reached, and continuing refinement of equipment, contrast agents, and software may be anticipated. As higher magnet strengths and rapid imaging sequences are investigated, further study of the long-term biologic effects of magnetic fields is required.

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Lyme Disease—Connecticut

CENTERS FOR DISEASE CONTROL

From 1984 through 1986, CDC received an average of 1,500 reports of Lyme disease annually, making it the most common tick-borne disease reported to CDC. The disease takes its name from Lyme, Connecticut, where the full spectrum of illness was first described in 1975. To further study the incidence of disease among its residents, Connecticut conducted a laboratory-based program of surveillance for Lyme disease from July 1, 1984, to March 1, 1986.

Indirect immunofluorescence antibody (IFA) and enzyme-linked immunosorbent assays (ELISA) were used to detect antibodies to *Borrelia burgdorferi*, the spirochete that causes the disease. Serologic testing was offered to Connecticut physicians without cost for all residents with suspected Lyme disease if the serum was accompanied by a case report form. Residents who, in 1984 or 1985, had onset of erythema migrans* and/or neurologic, cardiac, or arthritic manifestations† characteristic of Lyme disease and a positive serologic test (IFA $\geq$ 1:128 or ELISA $\geq$ 1:160 with a polyvalent conjugate) were included in the study.

Thirty-seven percent of the 3,098 patients reported met the criteria for inclusion in the study (460 in 1984 and 689 in 1985). In 1985, the first complete year of reporting, 66% of the patients studied had onset of symptoms from June through August. Twenty-four percent more patients had onset of symptoms from July through December 1985, than from July through December 1984 (492 compared with 397). Serologic testing was equally available during these time periods.

The incidence of Lyme disease for all Connecticut residents in 1985 was 22/100,000. Town-specific incidences ranged from zero to 1,156/100,000. Towns with the highest incidences were in southern Connecticut, east of the Connecticut River.

Fifty-one percent of patients with Lyme disease were male, and all but one of the 372 patients with known race reported in 1984 were white. Racial information was not gathered in 1985. Age-specific incidence was tabulated by 5-year age groups for patients reported in 1985. The incidence ranged from 11/100,000 for persons aged 20 to 24 years, to 39/100,000 for those aged 5 to 9 years (Figure 1).

Overall, 83% of the patients studied had erythemia migrans; 24% had arthritis; 8% had neurologic manifestations; and 2% had cardiac involvement. For those with arthritis, affected joints were the knee (89%), hip (9%), shoulder (9%), ankle (7%), and elbow (2%). In 1985, persons under 20 years of age were 1.6 times more likely to have arthritis than persons over 20 (7/100,000 compared with 4/100,000), while both groups were equally likely to develop erythema migrans (13/100,000). Seventy-nine percent of patients with arthritis did not report antecedent erythema migrans. Sixty-one percent of patients with erythema migrans reported a tick bite within 30 days of illness.

Sera received before July 1, 1985, (1,447 samples) were tested by IFA; sera received later (1,579 samples) were tested by ELISA; and 72 patients were reported without a request for serologic testing. For those with erythema migrans, the overall sensitivity of serology was 30% by IFA and 24% by ELISA. When the serum sample had been obtained 21 days or more after onset of symptoms, the sensitivity of the IFA increased to 45% and that of the ELISA, to 32%.

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Editorial Note: This study demonstrates the impact of Lyme disease in an endemic area. A comparison of the results with those of a 1977 study[1] reveals an increase of 163% in the incidence of Lyme disease in the eight towns reporting cases in 1977 and shows that, by the mid-1980s, the disease had spread inland from the coastal areas.

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*A distinctive skin lesion that characterizes the first stage of the disease.

†Neurologic and cardiac manifestations characterize the second stage of the disease, and arthritic manifestations, the third. These later stages can occur weeks or years after the initial tick bite and without evidence of an earlier skin lesion.

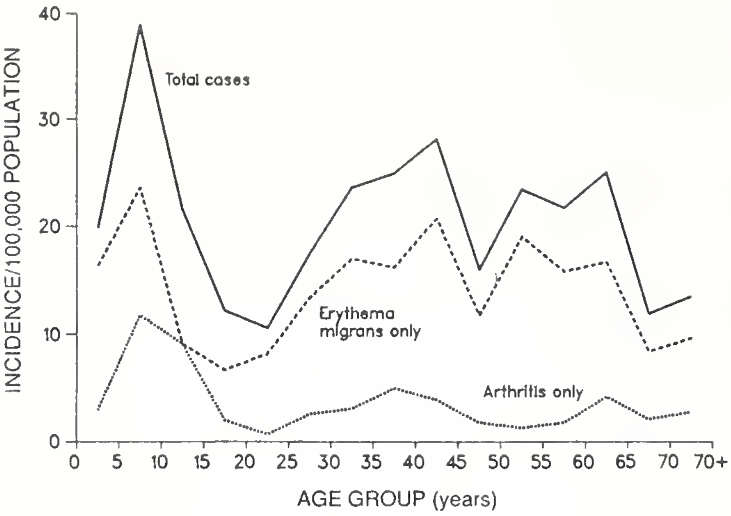

Figure 1
Lyme disease incidence, by age group—Connecticut, 1985

Serologic testing for Lyme disease has increased considerably in Connecticut. To trace these changes in testing, the state health department recently compared the annual number of immunoglobulin or IgG-specific serologic tests for Lyme disease ordered by Connecticut physicians from January 1984 through August 1987. The number and results of these tests varied by year as follows: 2,492 in 1984 (30% positivity), 3,770 in 1985 (20% positivity), 5,175 in 1986 (24% positivity), and 6,420 through August 1987 (14% positivity). This increase may reflect an actual increase in the incidence of Lyme disease or in the recognition of the disease by physicians. It may also reflect the increased availability of the laboratory test or its overuse, especially during the early stage of the disease, when the test is likely to be negative.[2-4]

The diagnosis of early Lyme disease remains primarily clinical, and physicians should be aware of the limitations of current tests. Sensitivities of the IFA and the ELISA are relatively low during stage one,[2-4] and the antibody response can be curtailed or aborted by early treatment with antibiotics.[3] In contrast, some research laboratories have reported sensitivities ≥95% for tests of patients with stage two or three Lyme disease.[2,4,5] Test specificities approaching 100% have also been reported;[2,6] however, considerable variability may occur among laboratories because the tests are not standardized and are difficult to perform. The sensitivities and lack of standardization of the tests preclude their use alone for routine disease reporting and reinforce the need to develop a reliable and practical case definition for surveillance that is not dependent on serologic test results.

Lyme disease is a problem of increasing national and international concern that merits continual and improved surveillance. Clinical studies to further define complications of the disease and to evaluate treatment regimens are needed. Public health education can help alert people to the symptoms of Lyme disease and to the importance of avoiding tick bites. The development of other effective primary preventive measures, particularly vector control, is essential.

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Update: Prevention of *Haemophilus Influenzae* Type b Disease

CENTERS FOR DISEASE CONTROL

Haemophilus b Conjugate Vaccine (Diphtheria Toxoid-Conjugate) has recently been licensed for use in children 18 months of age or older for the prevention of *Haemophilus influenzae* type b (Haemophilus b) disease. This vaccine consists of Haemophilus b capsular polysaccharide covalently linked to diphtheria toxoid (conjugate vaccine).

A previously developed vaccine consisting of the Haemophilus b capsular polysaccharide alone (polysaccharide vaccine) was shown to be effective in Finnish children over 24 months of age,[1] the age group in which approximately 20% of all invasive Haemophilus b infections among U.S. children less than 5 years of age can be expected to occur.[2] A similar, but not identical, polysaccharide vaccine was licensed for use in the United States in April 1985 on the basis of data demonstrating

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biochemical characteristics and immunogenicity comparable to the vaccine used in the original Finnish trial.[3] In that Finnish trial, polysaccharide vaccine was not effective in children less than 18 months of age. Because of the small sample size, efficacy could not be demonstrated in children 18 to 23 months of age. Polysaccharide vaccine was immunogenic (as measured by antibody production) in children 18 to 23 months old, but less so than it was in older children.[1]

Conjugate vaccine was developed with the ultimate goal of providing an effective vaccine for infants and younger children. Preliminary data from a new Finnish study suggest that conjugate vaccine was 87% effective in preventing Haemophilus b disease when administered in a three-dose regimen to infants 3 to 6 months of age.[4] However, licensure of conjugate vaccine for use in infants in the United States cannot be considered until this and other efficacy trials are further evaluated. Since antibody production after vaccination with conjugate vaccine in children 18 months of age or older is substantially greater than that after vaccination with polysaccharide vaccine, conjugate vaccine has been licensed for use in these children.

Safety

When conjugate vaccine alone was given to over 1,000 adults and children, no serious adverse reactions were observed.[5-12] When conjugate vaccine was given with diphtheria and tetanus toxoid and pertussis vaccine (DTP) and inactivated polio vaccine (IPV) to 30,000 infants, the rate and extent of serious adverse reactions did not differ from those seen when DTP was administered alone.[4] In one study of over 500 children 15 to 24 months of age, no significant difference in local or systemic side effects occurred between groups of children vaccinated with either polysaccharide vaccine or conjugate vaccine.[7] Local reactions were noted for 10.3% of children receiving polysaccharide vaccine and 12.5% of children receiving conjugate vaccine, while moderate fever (temperature >39.0°C [>102.2°F]) occurred in 1.4% of children vaccinated with polysaccharide vaccine and 0.7% of children vaccinated with conjugate vaccine.

Immunogenicity

In several studies using different regimens of vaccine administration, conjugate vaccine has shown greater immunogenicity than polysaccharide vaccine.[5-9,11,12] Response to a single dose of either polysaccharide vaccine or conjugate vaccine in children 15 to 24 months of age was specifically addressed in a randomized, double-blind study recently completed in the United States.[7] More than 90% of children vaccinated with conjugate vaccine responded with antibody levels considered to be protective (0.15μg/mL), whereas less than 50% of children vaccinated with polysaccharide vaccine had such a response. Over 60% of children vaccinated with conjugate vaccine, but less than 30% of those vaccinated with polysaccharide vaccine, produced levels of antibody considered to be indicative of long-term protection (1.0 μg/mL).* Children given conjugate vaccine at 15 to 24 months of age had significantly higher levels of antibody to Haemophilus b polysaccharide 1 year after vaccination than did children receiving polysaccharide vaccine.[8] Conjugate vaccine recipients responded to a booster dose of either polysaccharide vaccine or conjugate vaccine with higher geometric mean antibody levels than did those initially vaccinated with polysaccharide vaccine.[8]

In another study, children with sickle cell syndromes who received conjugate vaccine had higher postvaccination levels of antibody to Haemophilus b polysaccharide than did similar children given polysaccharide vaccine.[13] The studies to date showing increased immunogenicity in children less than 18 months of age[5,6,9,11] suggest that conjugate vaccine may be functioning as a T-cell dependent antigen. This finding contrasts with the lack of immunogenicity in infants and the absence of immunologic memory characteristic of T-cell independent polysaccharide vaccines.

Biological Activity

Several investigators have demonstrated that conjugate vaccine produces functional activity against Haemophilus b similar to that produced by polysaccharide vaccine. In one randomized, double-blind study, adults vaccinated with conjugate vaccine had serum bactericidal titers for Haemophilus b at least as high as those of adults receiving polysaccharide vaccine.[12] In addition, sera from adults vaccinated with conjugate vaccine were protective in an infant rat model of Haemophilus b disease, whereas similarly diluted sera from persons receiving polysaccharide vaccine showed no protective activity. In a separate study, sera from 9- to 14-month-old children given conjugate vaccine showed greater opsonic activity against Haemophilus b organisms than did sera from children vaccinated with polysaccharide vaccine.[14] Both studies showed a correlation between functional activity and serum levels of antibody to Haemophilus b polysaccharide and suggest that antibody produced in response to conjugate vaccine is biologically equivalent to that produced in response to polysaccharide vaccine.

Immunization Practices Advisory Committee (ACIP) Recommendations

1. The ACIP recommends that all children receive conjugate vaccine at 18 months of age. The efficacy of conjugate vaccine in children 18 months of age or older has not been determined in field trials. However, studies com-

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*It should be noted that three of four lots of polysaccharide vaccine used in this study had been heat-sized, a process which may reduce immunogenicity. However, children receiving non-heat-sized polysaccharide vaccine also had postimmunization levels of antibodies to Haemophilus b polysaccharide that were lower than those observed in children vaccinated with conjugate vaccine. In another study in which vaccine recipients were tested at 1 month and again at 1 year after completion of the immunization series, 9- to 15-month-old children who had received two doses of conjugate vaccine had significantly higher titers of antibody to Haemophilus b polysaccharide than did similar children who had received two doses of non-heat-sized polysaccharide vaccine.[5]

paring antibody production in children receiving conjugate vaccine with that in children receiving polysaccharide vaccine suggest that conjugate vaccine is likely to be more effective than polysaccharide vaccine. The ACIP therefore recommends use of conjugate vaccine in all children vaccinated against Haemophilus b disease.

2. While the duration of immunity after a single dose of conjugate vaccine is unknown at this time, it is expected to be at least 1.5 to 3 years. Until further information is available, revaccination is not recommended for children receiving conjugate vaccine at 18 months of age or older.

3. Vaccination of children more than 24 months of age who have not yet received Haemophilus b vaccine should be based on risk of disease. Children considered at high risk for Haemophilus b disease, including those attending day-care centers, those with anatomic or functional asplenia (i.e., sickle cell disease or splenectomy), and those with malignancies associated with immunosuppression, should they receive the vaccine. Although risk of disease decreases with increasing age, physicians may wish to vaccinate previously healthy children between 2 and 5 years of age to prevent disease that can occur in this group.

4. Because many children who received polysaccharide vaccine between the ages of 18 and 23 months may have had a less than adequate response to the vaccine, they should be revaccinated with a single dose of conjugate vaccine. Revaccination should take place a minimum of 2 months after the initial dose of polysaccharide vaccine.

5. There is no need to routinely revaccinate children who received polysaccharide vaccine at 24 months of age or older.

6. Children who had invasive Haemophilus b disease when there were less than 24 months of age should still receive vaccine according to the above recommendations since most children less than 24 months of age fail to develop adequate immunity following natural infection.[15]

7. Although increases in serum diphtheria anti-toxin levels can follow administration of conjugate vaccine, this vaccine should not be considered an immunizing agent against diphtheria. No changes in the schedule for administration of diphtheria toxoid, customarily given as DTP, should be made secondary to the use of conjugate vaccine.

8. Vaccination with either polysaccharide vaccine or conjugate vaccine probably does not inhibit asymptomatic carriage of Haemophilus b organisms. Although vaccinated children may be protected from invasive disease, they may pass the organism on to susceptible children. In addition, no vaccine is 100% effective. Therefore, chemoprophylaxis of household or day-care contacts of children with Haemophilus b disease should be directed at vaccinated as well as unvaccinated contacts. Because of the length of time necessary to generate an immunologic response to the vaccines, vaccination does not play a major role in the management of patients with Haemophilus b disease or their contacts. Vaccine may be given to previously unvaccinated children of appropriate age to provide protection against future exposure.

9. Conjugate vaccine and DTP may be given simultaneously at different sites. Data are lacking on concomitant administration of conjugate vaccine and measles-mumps-rubella (MMR) or oral polio (OPV) vaccines. However, if the recipient is unlikely to return for further vaccination, simultaneous administration of all vaccines appropriate to the recipient's age and previous vaccination status is recommended (including DTP, OPV, MMR, and conjugate vaccine).

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Treatment of Sexually Transmitted Diseases

THE MEDICAL LETTER

Many communicable diseases can be transmitted during sexual contact. The text and tables that follow are limited to treatment of infections associated mainly with sexual transmission. Hepatitis B, the acquired immune deficiency syndrome (AIDS), and the opportunistic infections associated with AIDS are not considered here.

GONORRHEA—Urethritis and cervicitis—Current treatment recommendations for gonorrhea reflect emergence of tetracycline-resistant *Neisseria gonorrhoeae* and the increasing prevalence of penicillin-resistant strains (Morbid Mortal Weekly Rep, 36 Suppl:15, Sept 11, 1987). Ceftriaxone (*Rocephin*—Medical Letter, 27:37, 1985) is highly effective, even against penicillin-resistant strains, and can be given in a single small-volume injection in the deltoid muscle (FN Judson, Sex Transm Dis, 13:199, 1986). Ceftriaxone is also likely to be effective against incubating syphilis, but not against coexisting *Chlamydia trachomatis* infection, which is present in up to 45% of women and 25% of heterosexual men with gonorrhea (Morbid Mortal Weekly Rep, 34:81S, 1985). In addition to ceftriaxone, therefore, women and heterosexual men with gonorrhea should receive a seven-day course of doxycycline (*Vibramycin;* and others) or another tetracycline to eradicate possible concomitant *Chlamydia* infection. Sexual partners of men or women with gonorrhea should also be treated.

Rectal and Pharyngeal—Rectal gonorrhea should be treated with ceftriaxone; spectinomycin is an alternative, but gonococcal resistance to spectinomycin has been reported (JW Boslego et al, N Engl J Med, 317:272, 1987). Pharyngeal gonorrhea may be difficult to treat, but ceftriaxone is effective for this indication; spectinomycin is not recommended for pharyngeal gonorrhea (DM Hutt and FN Judson, Ann Intern Med, 104:655, 1986).

In Pregnancy—Gonorrhea in pregnant women can be treated with ceftriaxone or spectinomycin. To eradicate *Chlamydia* in pregnancy, an erythromycin (500 mg qid for seven days) should be used, but not erythromycin estolate because of the increased risk of cholestatic hepatitis in pregnancy. Tetracyclines are not recommended during pregnancy because of possible adverse effects on the teeth and bones of the fetus.

CHLAMYDIA—*Chlamydia trachomatis* is now the most common sexually transmitted bacterial pathogen in the USA (TA Bell and JT Grayston, Ann Intern Med, 104:524, 1986).

Urethritis and Cervicitis—Nongonococcal urethritis is usually caused by infection with *C. trachomatis* or *Ureaplasma urealyticum*. These infections cannot be distinguished clinically, but either a tetracycline or an erythromycin is usually effective against both; sexual partners should also be treated. If the signs and symptoms of urethritis do not improve with a tetracycline, infection with tetracycline-resistant *U. urealyticum* may be present; this usually responds to an erythromycin. Tetracycline-resistant strains of *Chlamydia* have not been reported. Relapse may be due to reinfection by an untreated sexual partner but, in any case, the patient and all partners should be retreated. *C. trachomatis* can also cause mucopurulent cervicitis, which usually responds to the same regimen of a tetracycline or an erythromycin used to treat urethritis.

Diseases of Infancy—More than half of all infants born to women infected with *C. trachomatis* may also be infected; these infants are at risk for conjunctivitis and pneumonitis. Topical silver nitrate does not prevent neonatal chlamydial conjunctivitis. Treatment of conjunctivitis or pneumonia caused by *C. trachomatis* should be with a systemic erythromycin given for 14 days. Conjunctivitis should not be treated with topical therapy alone because this is ineffective and because the pharynx, rectum, and vagina are often also infected.

Other Chlamydial Infections—*Chlamydia trachomatis* is a major cause of epididymitis in young, sexually active men and can cause the "urethral syndrome" (dysuria and sterile pyuria) in sexually active women. Acute chlamydial proctitis occurs in homosexual men practicing unprotected receptive anal intercourse. Autoinoculation of the conjunctiva from a genital focus can produce conjunctivitis that responds to regimens directed against the genital focus. Reiter's syndrome is often associated with chlamydial infection of the urethra or cervix, and has recently been linked to the presence of *C. trachomatis* antigen in joint

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Table 1

TREATMENT OF SEXUALLY TRANSMITTED DISEASES

Type or Stage	*Drug of Choice*	*Dosage*	*Alternatives*
GONORRHEA			
Urethritis or Cervicitis[1]	Ceftriaxone	125-250 mg IM once	Amoxicillin 3 grams oral once **plus** probenecid 1 gram oral once Spectinomycin 2 grams IM once
Rectal	Ceftriaxone	125-250 mg IM once	Penicillin G procaine 4.8 million U IM[2] once **plus** probenecid 1 gram oral once Spectinomycin 2 grams IM once
Pharyngeal	Ceftriaxone	125-250 mg IM once	Penicillin G procaine 4.8 million U IM[2] once **plus** probenecid 1 gram oral once Trimethoprim-sulfamethoxazole 9 tablets[3] daily in one dose x 5 days
Ophthalmia (adults)	Ceftriaxone **plus** saline irrigation	1 gram IM daily x 5 days	Penicillin G 10 million U IV daily x 5 days **plus** saline irrigation
Bacteremia and arthritis	Ceftriaxone	1 gram IV daily x 7 days	Penicillin G 10 million U IV daily x 3 days **followed by** amoxicillin 500 mg oral qid x 4 days Doxycycline[4] 100 mg oral bid x 7 days
Meningitis	Ceftriaxone	2 grams IV daily for at least 10 days	Penicillin G at least 10 million U IV daily for at least 10 days Chloramphenicol 4-6 grams/day for at least 10 days
Endocarditis	Ceftriaxone	2 grams IV daily for at least 3 to 4 weeks	Penicillin G at least 10 million U IV daily for at least 3 to 4 weeks
Neonatal			
– Ophthalmia	Cefotaxime **plus** saline irrigation	25 mg/kg q8-12h x 7 days	Penicillin G 100,000 U/kg/day IV in 4 doses x 7 days **plus** saline irrigation
	OR Ceftriaxone **plus** saline irrigation	125 mg IM once	
– Arthritis and septicemia	Cefotaxime	25-50 mg/kg q8-12h x 10-14 days	Penicillin G 75,000 to 100,000 U/kg/day IV in 4 doses x 7 days
– Meningitis	Cefotaxime	50 mg/kg q8-12h x 10-14 days	Penicillin G 100,000 U/kg/day IV in 3 or 4 doses for at least 10 days
Children (under 45 kg)			
– Urogenital, rectal and pharyngeal	Ceftriaxone	125 mg IM once	Amoxicillin 50 mg/kg oral once **plus** probenecid 25 mg/kg (max. 1 gram) oral once Penicillin G procaine 100,000 U/kg IM once **plus** probenecid 25 mg/kg (max. 1 gram) once Spectinomycin 40 mg/kg IM once
– Arthritis	Ceftriaxone	50 mg/kg/day (max. 2 grams) IV x 7 days	Penicillin G 150,000 U/kg/day IV x 7 days Tetracycline (over 8 years old) 10 mg/kg oral qid x 7 days
	OR Cefotaxime	50 mg/kg/day IV in divided doses x 7 days	
– Meningitis	Ceftriaxone	100 mg/kg/day (max. 2 grams) IV x 7 days	Penicillin G 250,000 U/kg/day IV in 6 divided doses for at least 10 days
	OR Cefotaxime	200 mg/kg/day IV for at least 10 days	Chloramphenicol 100 mg/kg/day IV for at least 10 days
CHLAMYDIA TRACHOMATIS			
Urethritis or cervicitis	Doxycycline[4]	100 mg bid x 7 days	Sulfisoxazole 500 mg oral qid x 10 days
	OR Erythromycin	500 mg oral qid x 7 days	
Oculogenital syndrome	as for urethritis		
Proctitis	as for urethritis		
Neonatal			
– Ophthalmia	Erythromycin	12.5 mg/kg oral or IV qid x 14 days	
– Pneumonia	Erythromycin	12.5 mg/kg oral or IV qid x 14 days	Sulfisoxazole 100 mg/kg/day oral or IV in divided doses (after 4 weeks of age)

Table 1 (continued)
TREATMENT OF SEXUALLY TRANSMITTED DISEASES

Type or Stage	*Drug of Choice*	*Dosage*	*Alternatives*
CHLAMYDIA TRACHOMATIS (continued)			
Lymphogranuloma venereum	Doxycycline[4] OR Erythromycin	100 mg bid x 21 days 500 mg oral qid x 21 days	
EPIDIDYMITIS	Ceftriaxone **followed** by doxycycline[4]	250 mg IM once 100 mg oral bid x 10 days	Amoxicillin 3 grams oral once **plus** probenecid 1 gram oral once **followed by** doxycycline[4] 100 mg oral bid x 10 days
PELVIC INFLAMMATORY DISEASE			
—outpatients	Cefoxitin **plus** probenecid OR Ceftriaxone **either one followed** by doxycycline	2 grams IM once 1 gram oral once 250 mg IM once 100 mg oral bid x 10 days	
—hospitalized patients	Cefoxitin **plus** doxycycline **followed by** doxycycline	2 grams IV qid 100 mg IV bid until improvement 100 mg oral bid to complete 10 days	Clindamycin 600 mg IV qid **plus** gentamicin 2 mg/kg IV once **followed by** gentamicin 1.5 mg/kg IV tid until improvement **followed by** clindamycin 450 mg oral qid to complete 10-14 days
VAGINAL INFECTIONS			
Trichomoniasis	Metronidazole	2 grams oral once or 250 mg oral tid x 7 days	
—in pregnancy	Clotrimazole	100 mg intravaginally at bedtime x 7 days	
Bacterial vaginosis	Metronidazole	500 mg oral bid x 7 days	Amoxicillin 500 mg oral tid x 7 days
Vulvovaginal candidiasis	Clotrimazole OR Miconazole	100 mg intravaginally at bedtime x 7 days, or 200 mg x 3 days 100 mg intravaginally at bedtime x 7 days, or 200 mg x 3 days	Nystatin 100,000 units intravaginally at bedtime x 14 days
SYPHILIS			
Early (Primary, secondary or latent less than one year)	Penicillin G benzathine	2.4 million U IM once	Tetracycline 500 mg oral qid x 15 days Erythromycin 500 mg oral qid x 15 days
Late (more than one year's duration, cardiovascular	Penicillin G benzathine	2.4 million U IM weekly x 3 weeks	Tetracycline 500 mg oral qid x 30 days Erythromycin 500 mg oral qid x 30 days
Neurosyphilis	Penicillin G OR Penicillin G procaine **plus** probenecid **either one followed** by penicillin G benzathine	2 to 4 million U IV q4h x 10 days 2.4 million U IM daily 500 mg quid orally both x 10 days 2.4 million U IM weekly x 3 weeks	Tetracycline 500 mg oral qid x 30 days Erythromycin 500 mg oral qid x 30 days
Congenital	Penicillin G OR Penicillin G procaine	25,000 U/kg IM or IV bid for at least 10 days 50,000 U/kg IM daily for at least 10 days	
CHANCROID	Ceftriaxone OR Erythromycin	250 mg IM once 500 mg oral qid x 7 days	Trimethoprim-sulfamethoxazole 2 tablets[3] bid x 7 days

1. Since a high percentage of women and heterosexual men with gonorrhea have coexisting *Chlamydia trachomatis* infection, these patients should also receive a seven-day course of doxycycline or tetracycline, as recommended for treatment of *Chlamydia*.
2. Divided into two injections at one visit
3. Each tablet contains 80 mg trimethoprim and 400 mg sulfamethoxazole.
4. Or tetracycline 500 mg qid

fluid (A Keat et al, Lancet, 1:72, 1987). Lymphogranuloma venereum is also caused by *Chlamydia trachomatis;* this infection usually responds to three weeks' treatment with a tetracycline or an erythromycin.

EPIDIDYMITIS—Sexually transmitted acute epididymitis is usually caused by *Chlamydia trachomatis* and/or *Neisseria gonorrhoeae.* When the causative organism is not known, epididymitis can be treated with a single dose of ceftriaxone, followed by 10 days' treatment with tetracycline or doxycycline. Some patients, generally older men or men who have had urinary tract instrumentation, may have a non-sexually-transmitted epididymitis syndrome associated with urinary tract infection due to enteric gram-negative bacilli or *Pseudomonas.* In homosexual men, *E. coli* acquired by rectal intercourse is also a common cause of epididymitis.

PELVIC INFLAMMATORY DISEASE—Pathogens that can cause the syndrome of acute pelvic inflammatory disease include *Chlamydia trachomatis, Neisseria gonorrhoeae, Mycoplasma hominis,* facultative enteric gram-negative bacilli, and various anaerobic bacteria. The precise bacteriological diagnosis is often not known and several different organisms may be present simultaneously; the treatment regimen, therefore, should include a combination of antimicrobial agents active against all of these pathogens (TG Burnakis and NB Hildebrandt, Rev Infect Dis, 8:86, 1986).

VAGINAL INFECTIONS—Suspected vaginal infections are best managed by first making an etiological diagnosis, usually by microscopic examination of discharge, and then treating with appropriate antimicrobials (LVH Hill and JA Embil, Can Med Assoc J, 134:321, 1986). Sulfonamide creams and other so-called "broad-spectrum" topical vaginal preparations are not effective, and douching should not be considered adequate primary treatment for any vaginal infection. The role of sexual transmission is important in trichomoniasis, probably is unimportant in vulvovaginal candidiasis, and remains to be determined in bacterial vaginosis (formerly called nonspecific vaginitis).

Trichomoniasis—Metronidazole *(Flagyl;* and others) remains the treatment of choice for trichomoniasis unless contraindicated by pregnancy or hypersensitivity. Two grams as a single oral dose appears to be as effective as longer regimens when male sexual partners are treated simultaneously. Metronidazole-resistant strains of *Trichomonas vaginalis* have been reported; optimal treatment for infection with these strains has not been determined (JG Lossick et al, J Infect Dis, 153:948, 1986).

Trichomoniasis in Pregnancy—Metronidazole is generally considered contraindicated during the first trimester of pregnancy because of concern about the possibility of fetal malformations; alternative treatments, however, are much less effective. One week's treatment with clotrimazole *(Gyne-Lotrimin; Mycelex G)* intravaginally can relieve symptoms and may cure some patients. Iodine-containing douches should be avoided during pregnancy because of the risk of fetal thyroid suppression.

Bacterial vaginosis—Bacterial vaginosis (formerly called nonspecific vaginitis) can be recognized from signs of vaginal discharge and odor, an elevated vaginal fluid pH (>4.5), a wet mount of vaginal fluid showing "clue cells" (epithelial cells heavily coated with bacteria), and by a fishy odor when 10% KOH is added to vaginal secretions (CA Spiegel et al, J Infect Dis, 148:817, 1983). The predominant flora usually consists of *Gardnerella vaginalis, Mycoplasma hominis,* and various anaerobes. Metronidazole taken for seven days is the treatment of choice; single-dose regimens are less effective (AL Blackwell et al, Lancet, 2:1379, 1983; J Swedberg et al, JAMA, 254:1046, 1985).

Vulvovaginal candidiasis—Many remedies are available for vulvovaginal candidiasis. Topical antifungal drugs such as miconazole *(Monistat)* or clotrimazole are more effective and convenient than nystatin against this common condition, but recurrence is possible after any regimen. Discontinuing systemic antibiotics or oral contraceptives may be helpful for some patients and can decrease the frequency of recurrence. Prophylactic oral ketoconazole *(Nizoral)* has been tried in women with frequent, persistent recurrences (JD Sobel, N Engl J Med, 315:1455, 1986).

SYPHILIS—Parenteral pencillin G remains the drug of choice for treating all stages of syphilis. Primary, secondary, or latent syphilis known to be of less than one year's duration can be treated effectively in a single visit with benzathine penicillin G, a repository formulation. The optimal treatment schedules for syphilis of more than one year's duration and for neurosyphilis are less well established; most authorities treat all patients with late syphilis with three doses of penicillin G benzathine at weekly intervals, but patients with neurosyphilis should first receive 10 days of intravenous penicillin or IM procaine penicillin with probenecid *(Benemid;* and others).

Syphilis in Pregnancy—Syphilis in pregnant women should be treated with penicillin in doses appropriate to the stage of the disease, and followup quantitative serological tests should be performed monthly until delivery. Retreatment in succeeding pregnancies is unnecessary in the absence of clinical or serological evidence of new infection. Pregnant women allergic to penicillin should be given an erythromycin, but the effectiveness of erythromycin for syphilis is uncertain, and careful followup of mother and child is recommended. If erythromycin is used, the infant should be treated with penicillin at birth.

Congenital Syphilis—A positive serological test for syphilis in a newborn without stigmata of syphilis may be due either to passive transfer of maternal antibodies or to prenatal infection. If there is no definite history of adequate treatment of the mother with penicillin, Medical Letter consultants recommend prompt treatment of seropositive infants rather than waiting three to six months to see if the antibody titer falls.

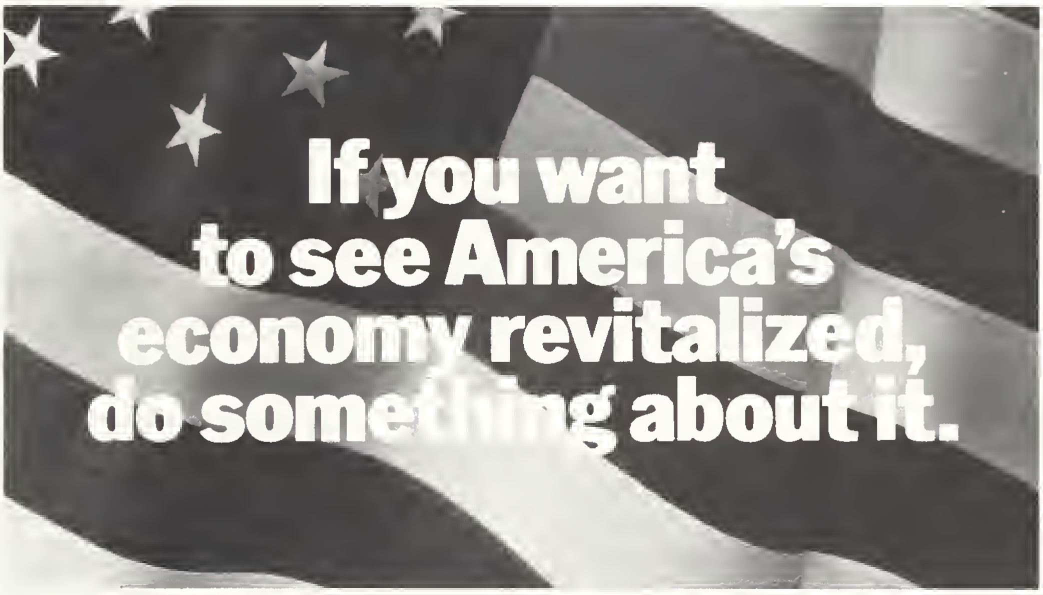
Syphilis and AIDS—Recent reports suggest that AIDS may lead to syphilitic relapse, including acute syphilitic meningitis, meningovascular syphilis and asymptomatic neurosyphilis (DR Johns et al, N Engl J Med, 316:1569, 1987; CD Berry et al, N Engl J Med, 316:1587, 1987; CM Beck-Sague et al, N Engl Med, 317:1473, Dec 3, 1987). Data are insufficient to recommend different regimens for AIDS patients with syphilis, but higher doses and longer periods of treatment may be needed.

CHANCROID—Chancroid, caused by *Haemophilus ducreyi*, has caused several recent epidemics in the USA and is widely prevalent in some areas outside the USA (GP Schmid et al, JAMA, 258:3265, Dec 11, 1987). Drug resistance varies considerably throughout the world; ceftriaxone or an erythromycin is now the drug of choice.

PEDICULOSIS PUBIS—Sexual acquisition of pubic lice is common. Lindane *(Kwell; Scabene)*, permethrin *(Nix)*, or pyrethrins with piperonyl butoxide *(Rid;* and others) offer effective topical treatment.

VENEREAL WARTS—Podophyllin remains the most widely used treatment for condyloma acuminata, or venereal warts, but the cure rate is low. Liquid nitrogen may be somewhat more effective. For treatment of intra-anal, intra-urethral, or cervical warts, electrocauterization, laser therapy, or surgery may be necessary (A Eskelinen and N Mashkilleyson, Drugs, 34:599, 1987). Injection of alpha interferon systemically or directly into the warts has been reported to be effective in preliminary studies (LJ Eron et al, N Engl J Med, 315:1059, 1986). Topical application of fluorouracil has been effective in some patients (H-B Krebs, Obstet Gynecol, 70:68, 1987). Cervical and vulvar infection with some types of human papillomavirus (HPV) has been linked with cervical and vulvar dysplasia and cancer; women with vulvar, vaginal, or cervical warts should therefore have a Pap test and/or colposcopy (DJ Dyall-Smith, Med J Aust, 147:55, 1987; CA Benson, Adv Contracept, 3:103, 1987).

HERPES SIMPLEX—Acyclovir *(Zovirax)* taken orally for seven to ten days shortens the duration of pain, viral shedding, and systemic symptoms in primary herpes infection (Medical Letter, 27:41, 1985). Topical acyclovir has little impact on most recurrent episodes, but oral use may be helpful when given early in patients with severe recurrences. For patients who have severe symptoms or complicated infections, intravenous acyclovir 5 mg/kg q8h can be used. Continuous suppressive therapy with acyclovir (200 mg orally two to five times daily) markedly reduces the rate of recurrence in patients with frequent (>6/year) episodes, but this type of treatment is costly, and experience with its use for more than two years remains limited (D Gold and L Corey, Antimicrob Agents Chemother, 31:361, 1987; DI Dorsky and CS Crumpacker, Ann Intern Med, 107:859, Dec 1987).



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State Rate Setting Revisited

MERTON D. FINKLER

In the Fall 1986 *Health Affairs,* Schramm, Renn, and Biles argued that state hospital rate regulation has been and will continue to be an efficient policy to contain hospital expenditures.[1] They question whether regulation has significant long-term impact on cost inflation; whether there is a change in hospital use in regulated states; and whether rate setting adversely affects the financial strength of institutions.

This Commentary returns to these questions and to the lessons to be learned from mandatory state rate setting.[2] While mandatory rate setting did restrain, to some degree, hospital expenditure growth during 1976-1983, a number of nonrate-setting states also had relatively low growth rates. Furthermore, the relative success of mandatory rate regulation has not been maintained since 1983. When the cost-containment performance of rate setting is judged in a broader context—total personal health care expenditure growth—the data reveal very limited successes for, as well as substantial spread within, the six regulated states. Thus, it can be argued that the scope of analysis should focus on the effects of specific state policies on the incentives and behavior of patients, insurers, and providers rather than on the categorical distinction between mandatory rate regulation and all other options. Finally, in contrast to Schramm and colleagues' single-variable portrayal of each state, I recommend that any evaluation of differences between regulated and non-regulated states should, at a minimum, control for differences in income, insurance coverage, and existing levels of expenditure.

Impact of Regulation on Inflation

Schramm, Renn, and Biles provide data that show a 2% difference on average between regulated and nonregulated jurisdictions in per capita rates of hospital expenditure growth for 1976-1983.[3] My analysis reviews the evidence by state for this period and then extends to the 1983-1985 period, during which both public policy and private purchasing behavior changed markedly. A look at the data shows that, of the ten states with the smallest expenditure growth during 1976-1983, six were among the ten states with the largest per capita hospital expenditures in 1976 and thus with the biggest problems; three of the six did not have mandatory rate regulation (Table 1).[4]

The growth differential of two percentage points between the two sets of states could be policy relevant, depending upon how the rate growth difference was achieved. Schramm and colleagues discuss rate growth in terms of cost inflation, which hides the source of the expenditure growth. Surely, cost savings achieved by reducing services cannot be equated with savings achieved by increasing productivity. Consequently, analysis at the total expenditure level is not sufficiently disaggregated for use by policymakers; analysts should differentiate among price, productivity, and utilization growth rates.

Some might be interested in comparing per capita growth rates of hospital expenditures and national expenditures. From 1976 to 1983, the dollar value of the gross national product per capita grew at an 8.7% rate; thus, the rate-regulated state expenditures, at 12%, grew at 38% higher than the national economy. Such a rate difference, however, is not surprising for a service-oriented set of products.

Data since 1983 suggest the book is still open on the long-term relative cost-containment benefits of mandatory rate regulation. The worst performers (states with rates of hospital expenditure growth of 8% or more) were New York, New Jersey, Washington, and Utah, of which the first three are rate-regulated states. The best performers (with growth rates of 2% or less) were Iowa, Kansas, North Carolina, Nebraska, and Nevada, none of which has had mandatory rate regulation.

To isolate the effects of rate regulation, either one should compare the rate-regulated states with some representation of what would have transpired without regulation, or one should control for those factors (income, insurance coverage, and market structure) that differ across states. Since Schramm and colleagues employ neither of these approaches, their discussion of whether regulation has significant long-term impact on the cost-inflation rate is unconvincing.

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Table 1
HOSPITAL EXPENDITURES PER CAPITA,
BY ANNUAL PERCENTAGE GROWTH

State	*1976*	*1983*	*1985*	*Annual growth 1976-1983*	*Annual growth 1983-1985*
New York (R)	$287.25	$586.00	$687.34	10.7%	8.3%
Vermont	182.88	381.96	407.08	11.1	3.2
Rhode Island	231.06	490.97	568.76	11.4	7.6
Massachusetts (R)	309.09	680.03	765.81	11.9	6.1
Connecticut (R)	219.94	486.26	560.06	12.0	7.3
New Jersey (R)	196.23	436.37	510.45	12.1	8.2
Minnesota	217.16	486.87	527.76	12.2	4.1
Wisconsin	204.65	475.23	501.17	12.8	2.7
California	227.04	526.28	563.35	12.8	3.5
Oregon	173.74	404.98	442.68	12.9	4.6
Idaho	128.46	302.93	340.10	13.0	6.0
Colorado	185.85	437.09	457.25	13.0	2.3
Delaware	189.41	451.14	519.95	13.2	7.4
Maryland (R)	192.95	458.72	487.86	13.2	3.1
Washington (R)	157.70	375.76	442.00	13.2	8.5
Illinois	249.54	599.09	641.53	13.3	3.5
Michigan	239.68	574.97	631.59	13.3	4.8
Arizona	187.02	452.08	499.88	13.4	5.2
North Carolina	144.00	355.36	366.35	13.8	1.5
Texas	168.44	416.46	450.13	13.8	4.0
South Carolina	128.63	318.69	362.90	13.8	6.7
Utah	134.18	333.39	392.92	13.9	8.6
Maine	187.47	469.94	516.67	14.0	4.9
New Hampshire	151.98	383.58	430.54	14.1	5.9
Iowa	188.54	474.29	479.64	14.1	0.6
Oklahoma	162.75	412.17	442.92	14.2	3.7
Kansas	188.58	481.04	498.23	14.3	1.8
Georgia	162.56	413.59	463.19	14.3	5.8
Nebraska	196.65	500.96	517.22	14.3	1.6
Virginia	155.19	398.73	431.85	14.4	4.1
Florida	203.99	521.88	580.90	14.4	5.5
New Mexico	135.60	352.81	387.62	14.6	4.8
North Dakota	202.20	523.92	602.75	14.6	7.3
Wyoming	123.46	319.84	366.92	14.6	7.1
Mississippi	139.17	361.12	395.21	14.6	4.6
Ohio	218.86	566.95	634.38	14.6	5.8
West Virginia	194.41	506.85	535.71	14.7	2.8
Indiana	180.57	479.15	513.14	15.0	3.5
Missouri	221.74	591.53	629.45	15.0	3.2
Hawaii	132.40	352.02	384.27	15.0	4.5
Nevada	200.96	535.37	542.99	15.0	0.7
Kentucky	150.07	401.27	432.65	15.1	3.8
Montana	146.68	397.34	440.61	15.3	5.3
Tennessee	183.25	504.87	567.52	15.6	6.0
Pennsylvania	220.37	609.08	671.96	15.6	5.0
South Dakota	145.90	404.24	440.83	15.7	4.4
Alabama	168.65	477.49	498.34	16.0	2.2
Arkansas	139.57	393.42	428.73	16.0	4.4
Louisiana	168.65	476.84	541.83	16.0	6.6
Alaska	128.71	376.23	420.56	16.6	5.7
Mean (std.dev.)	183.08 (40.49)	454.34 (84.98)	498.47 (94.10)	14.0 (1.3)	4.8 (2.0)

Note: (R) refers to mandatory rate regulation state. Standard deviations are in parentheses.

Regulation and Hospital Use

Hospital admissions per thousand and expenditure per hospital admission provide accepted and readily available measures of resource use.[5] In 1976, the hospital admission rate per thousand for nonregulated states exceeded the 138.1 average rate for the six states with mandatory rate regulation by 19.8 (14.3%). By 1983, this difference had narrowed to thirteen admissions per thousand (9.2%). The average admission rate for the fifty states had dropped from 156 to 153, while the regulated states actually increased admissions to 141.4 per thousand. Maryland (2.5% annual growth rate) and New Jersey (1.2%)—two rate-regulated states—along with Tennessee (1.6%) and Delaware (1.2%) topped the list of states with the largest growth in admissions per thousand. Between 1983 and 1985, on average, the hospital admissions rate dropped by 1.5%; no states experienced increased admissions per thousand, and the fastest declines were achieved in Iowa, Kansas, and Nebraska—all nonrate-regulated.

These changes in hospital admission rates can be interpreted in two ways. Increased rates of hospital use might mean that access to care has improved, which puts Maryland's high growth rate performance in a positive light. Alternatively, many of the services now delivered in hospitals can be provided more cost-effectively in an ambulatory setting; consequently, the 1976-1983 rises in hospital admissions, just noted, might be looked upon as an unfavorable effect of rate setting. It is not surprising that Maryland and New Jersey, which both feature case-based payment regulation, showed fast growth in admissions rates.[6] They also had relatively small declines in admission rates for 1983-1985.

Conversely, expenditures per admission offer quite different evidence. Not surprisingly, the case-based rate-control states, Maryland and New Jersey, have the lowest rates of growth in hospital expenditure per admission, along with New York: 10.5, 10.7, and 10.7 percent, respectively, for 1976-1983. All of the rate-regulated states except Washington are among the top seven states with the lowest expenditure-per-admission growth rates. These results are good news for backers of rate regulation; however, the increased admissions noted earlier diminish these positive effects on total hospital expenditure growth per capita.

Between 1983 and the present, there have been numerous changes in both private and public medical service policies and purchasing behaviors. Indeed, the patterns of expenditure per admission just cited changed during 1983-1985. The mean rate of growth in expenditure per admission fell by 26.6%, but the variation among states increased. If at least one standard deviation (2.1%) below the mean (10.5%) is defined as good performance, seven states achieved this benchmark, and only one of these, Maryland, had mandatory rate regulation. California and Pennsylvania, at 7.0% annual growth rate, performed almost as well as Maryland. A more disaggregated examination of each state's policies and circumstances is necessary to explain the reasons for such good performance.

Furthermore, if the ultimate public policy goal is reduced growth in total medical expenditures—not just in the 39% devoted to hospital services—we need to analyze more than the hospital experience.[7] If stringent controls address only inpatient expenditures, strong incentives exist to use outpatient or clinic services. If behavior follows these incentives, the result is an inefficient mix of hospital and nonhospital services as well as possibly growth in the total level of resources devoted to medical care.[8] On average, personal health care expenditures per capita grew at a 12.5% rate between 1976 and 1982.[9] Among the ten states with the lowest growth rates in per capita personal health expenditures, only two are rate-regulated: New York and New Jersey.

Since Maryland's total personal health care expenditure growth was roughly equal to the mean state experience, increased nonhospital expenditures essentially replaced the previously noted hospital savings. Similar substitutions of services, although smaller in magnitude, appear to have occurred in rate-regulated Massachusetts and Connecticut. Schramm and his coauthors deal with the impact of regulation on total health system costs, but their analysis never goes beyond the hospital level to address the full complement of medical care costs.

Although the regulated states were quite successful in keeping the relative growth in hospital expenditure per admission low for 1976-1983, they were less successful in keeping admissions rates down. Furthermore, the impact of rate regulation on total medical care expenditures reveals a mixed performance among the rate-regulated states.

Regulation and Financial Viability

Schramm, Renn, and Biles state that rate setting does not adversely affect the financial strength of institutions and cite supporting evidence on hospital operating margins and occupancy rates. There is no quarrel with the operating margin evidence; however, its interpretation is another matter. Both the history and economic theory of regulation tell us not to be surprised by the continued economic health of firms in a regulated industry. Whether existing firms lobby to keep others out or accept regulation in exchange for stable revenues, bankruptcy in regulated industries has been rare, as has been the entry of entrepreneurs.[10] Since Schramm and colleagues examine data only for the existing hospitals in regulated states, the effect of rate regulation on financial viability must be interpreted narrowly; that is, only existing hospitals are not hurt by such regulation, a result that is neither new nor surprising. Also, in rate-regulated states, hospital closure is relatively uncommon, partly because for-profit entry (and thus exit) is either illegal or very costly.[11]

Schramm and colleagues also argue that a high occupancy rate is a sign of an efficient and financially strong hospital. They give the impression that financial strength reflects efficiency. Questionable hospital admissions that serve only to fill up empty beds may generate high occupancy rates and, under some regulatory systems, such as those in New York and Massachusetts, additional revenues. Although these additional funds may add to a hospital's financial strength, there is little reason to believe that such admission patterns are efficient clinical practices.

Discussion

A full analysis of the effects of rate setting must go beyond these questions to address the opportunity cost of such regulation. Quantitative estimates are not readily available; however, Sloan has argued that opportunity cost, in addition to those resources devoted by both hospitals and regulators to complying with and administering regulation, might be high.[12] Some innovative cost-saving producers will be discouraged from entering medical care markets in which prices are controlled. Also, existing inefficient producers will not be encouraged to exit; in addition, they are most likely subsidized by efficient service producers or consumers. Thirdly, resource shifting based on regulatory incentives, and not on cost-effective service delivery, will become common. Finally, the mix and character of services provided in hospitals will be changed in response to the regulation; the result is not likely to be efficient.

To evaluate regulatory policy options fully, analysts should compare the abilities of particular regulatory strategies and incentives to reduce health expenditures, when differences in particular medical markets are identified and incorporated. Schramm and his coauthors make no such comparisons; instead, they employ simple univariate indicators to compare six states that feature various forms of mandatory rate regulation with forty-four states, plus the District of Columbia, that feature a wide variety of incentives, rules, and behaviors. Multivariate analysis is necessary to answer key public policy questions, since the differentials in expenditure growth rates between states may not be the result of rate regulation alone. For example, most of the high-expenditure states showed relatively low hospital expenditure growth rates, with or without mandatory rate regulation (Table 1); thus, other factors are likely to be as important. In particular, results drawn from bisecting the states may be as much a consequence of changes in income levels or in the character of insurance coverage as of mandatory rate regulation.

Despite their claims, what Schramm, Renn, and Biles present does not tell us much about the long-term implications of mandatory rate regulation for service delivery. The character of the financial incentives within a particular regulatory system must be addressed to understand past, as well as potential, performance. For example, states such as Massachusetts, which control per diem charges but not patient volume, are likely to experience longer patient stays than do states that regulate the charge per admission. Furthermore, states such as Massachusetts and New York, which penalize hospitals with low occupancy rates, actually are encouraging extended stays. States that control the payment per admission, such as Maryland and New Jersey, also have performance concerns that require monitoring. Case-based payment systems provide incentives for hospitals to have relatively high admission rates. History clearly suggests that, if incentives to supply services exist, providers will indeed do so. If physicians are paid relatively well—in comparison with what it costs them—to perform hospital-based procedures, they will respond to such financial incentives with increased admissions to hospitals.

Finally, the authors claim that rate-setting and competition policies can coexist.[13] Successful mixes of regulation and market mechanisms are possible, but the potential for inefficiency and corruption is great.[14] Competition exists in any combination of the two approaches, but the character of the competition has major implications for both cost savings and efficiency. Under market-oriented policies, suppliers compete for patients, based on prices, qualities, and quantities of care and service. To make such a market generate desirable social outcomes, we may need government intervention to provide access for the poor and information to encourage intelligent consumption. In government-directed decision making, suppliers compete in regulatory or political arenas for property rights such as the right to add or delete a medical service or capital asset, and possibly for a fixed, by legislation or regulation, pool of revenues. Patients in these markets either take what is given to them, wait for services, or travel outside the regulatory boundaries to buy services. To sort out these two approaches and their variations, policymakers should focus on the specific incentives that producers of services are given to provide cost-effective medical services and purchasers are given to buy medical insurance or care, rather than on broad categories of policies. Competing policies can be evaluated clearly only when incentives, tradeoffs, and opportunity costs are explicitly faced and understood. Unforeseen bad consequences need not be unforeseeable.

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3. The authors' selection of 1976 to 1983 as a benchmark (see Schramm et al., "Controlling Hospital Cost Inflation," 24,27) magnifies results that support their hypothesis. Although there is no particular reason to agree with these benchmarks, I employ the same time period to focus on methodological and interpretation differences.
4. The District of Columbia, at $486.42 per capita in 1976, towered over the fifty states at more than two and one-half times the mean expenditure. The District, however, is not a state, and purchasing behavior is dominated by federal governmental policy, which makes comparison with the fifty states very difficult; thus, the District of Columbia has been dropped from all comparisons here. Furthermore, the District's performance for 1976-1983 magnifies the differences between rate- and nonrate-regulated states. The authors set up fairly stringent conditions to qualify for their designation as a regulated state (see Schramm et al., "Controlling Hospital Cost Inflation," 24,Note 12.) Of the ten states with the lowest growth rates for 1976-1983, seven states had at least some aspects of mandatory rate regulation. The correlation between 1976 hospital expenditures per capita and the 1976-1983 growth rate was 0.52; thus, one might argue that there is regression to the mean. For further explanation, see D. Dranove and K. Kone, "Do State Rate Setting Regulations Really Lower Hospital Expenditures?" *Journal of Health Economics* 4(1985):159-165.
5. Expenditure per admission combines both resource price and resource use; therefore, further analysis would be required to examine resource use explicitly.
6. States with relatively low growth rates in expenditures per admission tended to have high growth rates in admissions per thousand. The simple correlation between the two rates for the 1976-1983 period equaled -.56.
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13. Schramm et al., "Controlling Hospital Cost Inflation," 31.
14. C.A. Eby and D.R. Cohodes, in "What Do We Know About Rate-Setting?" *Journal of Health Politics, Policy, and Law* (Summer 1985):299-327, conclude that "it is still less clear that rate setting would constrain health care costs more than would increased competition and selective contracting." Thus, they also do not seem to share the optimism of Schramm, Renn, and Biles.

Strategies for Fees

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Many physicians set their fees according to what other providers charge. That pricing strategy serves two purposes; it guarantees competitiveness with other doctors in the area and it assures that the doctor is keeping up with the increases implemented by others.

While this pricing technique is simple and convenient, in the present environment it may not be entirely effective. With cost containment programs, utilization controls, and movement away from charge based reimbursement, it is becoming increasingly important to consider a variety of factors in addition to the charges of one's peers.

Pricing Concepts

Some of the techniques and concepts used in other industries for setting the prices of goods and services may be relevant for medical practices striving to increase their income. One of these concepts is return; it involves setting target income levels that assure an adequate return or profit. The aspect of return that is particularly useful is not the idea of generating a profit, but the idea of establishing an income objective. Most practices do not set income targets, they simply implement some type of general fee increase and hope for the best.

The first step in meeting income objectives is determining the price segment in which the practice wants to compete. The standard pricing strategy of physicians has been to be competitive. Competitive pricing, however, does not necessarily mean that fees must be set at the median point. In every industry there are successful high and low priced businesses. For example, in the computer industry, IBM is regarded as a high priced vendor and has been continuously successful with that reputation. In retailing, there are a number of discount department stores that have achieved high profits by maintaining low prices. Physicians should determine where they want to position themselves and then must make an effort to assure that their fee structure is appropriate for their services and the patients they see.

Income targets also require an analysis of the payer mix and the income anticipated from each. Medicare and Blue Shield no longer reimburse exclusively on the basis of a physician's profile. Instead, payment increases are based on a combination of the provider's charge profile and economic factors. For example, the most recent Medicare update was a maximum of 3.2 percent regardless of a provider's increase in charges. Commercial insurances are one of the few remaining charge based payers where fee increases generally produce proportionate reimbursement increases.

Given the variations in how carriers respond to increases in fees and the variations in coverage among insurance plans, the best way to implement increases is to be selective. Across the board increases are no longer effective; different services should receive different increases. For example, increases in the prices of inpatient services are likely to be more fully covered by insurances while increases in outpatient services will fall more heavily upon the patient's shoulders. Likewise, small dollar increases for high volume services have a better impact upon patients and the bottom line than high dollar increases on low volume services. In general, fee increases should be approached by looking at the coverage and volume of each individual service and determining its appropriate increase, keeping in mind the overall income objective.

For many practices, projecting and analyzing income has been complicated by the rising number of negotiated rate payers, which account for a growing share of practice income. Negotiated rate payers usually contract with physicians and reimburse them according to a capitation rate or a fixed fee schedule. They includes HMOs, preferred provider organizations and other prepaid plans. The difficulty with negotiated rate payers is that increased fees produce only increased allowances. Therefore, increasing income requires a different approach.

One alternative is to negotiate for higher payments. Negotiation is possible if the practice has a well respected reputation, is strategically located, is affiliated with a particular hospital or encompasses a unique specialty. The purpose of the negotiations should be to ensure that the payments from the contract payer at least equal the average reimbursement from all other payers. If they do not, the practice is jeopardizing its income and must have an offsetting reason for accepting the lower payments.

Another alternative to consider is changing the service mix. In many instances, reimbursement from fixed rate

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payers is lower for routine office visits and higher for other services. Therefore, it may make sense to either expand the scope of services or substitute diagnostic and therapeutic services for office visits.

A variation of this approach is to obtain designation from the payer as a specialist since specialists often receive higher reimbursement than that provided to primary care physicians. For example, an internal medicine group with a board certified cardiologist may apply for specialty designation for holter monitors, and stress tests.

A more sophisticated pricing concept that could generate additional income is concentrating on a particular share of the market. This strategy involves negotiating with insurers to act as the exclusive provider of a certain set of services or services to a specific patient population. For example, a neurosurgical group may agree to accept all patients within a geographic area requiring certain surgical services. Such contracts produce a steady stream of patients and income, which can bring stability to a practice or lead to predictable and controllable growth.

As a trade off to gaining market share with a particular insurer, however, the practice must usually accept payments less than its normal charges. The key to success in such an arrangement is to assure that the payments cover costs and do not significantly erode the practice's average reimbursement.

Participation

Instead of making a scientific effort to raise fees and increase income, physicians can avoid dealing with third parties altogether, if they do not accept assignment with any carriers and bill the patients directly for all services. While this approach has some merit for certain practices in selected geographic areas, more and more regulations are aimed at preventing it. For example, Medicare now requires non-participating physicians to notify patients in writing of all surgical fees estimated to be greater than $500. The notice must state the estimated amount for the procedure and other information that highlights the additional cost to the patient for using a non-participating rather than a participating physician.

Patient Considerations

Any fee review must consider the patient. Patients have become more price conscious and more assertive about what they may consider excessive fees. Marketing research has shown that a consumer's perception of price is many times more important than the actual price. Often times a person's reaction to price is a combination of the out-of-pocket expense and perception to the value received. In essence, price perceptions are based not on an objective assessment or comparison, but rather on a subjective and emotional reaction to a variety of factors.

This phenomenon can actually be used to a physician's benefit. A patient's reaction to fees will be minimized if they feel the charge is justified. They must receive adequate value and service for the price they pay. Physicians can increase the actual and perceived value of their services in a number of simple ways. Most important is the direct interaction between the patient and doctor. It has been well documented that patients value the time they spend with their doctor. If time is taken to talk to the patient, to review the patient's history or discuss any concerns, then the patient has received a valuable service.

Other ways to add value are to minimize waiting times, schedule appointments at times that are convenient for patients and assure that there is proper follow up on matters such as reporting the results of diagnostic tests.

Considerable reaction to fees and any increases can be alleviated if patients are told ahead of time what their bill is likely to be. People expect medical care to be expensive, but they are often hit with the medical equivalent of "sticker shock" when they actually see the bill. The best way to prevent this is to mention the fees ahead of time, usually when the appointment is made or when they come in to register for their visit.

The office staff should also be properly trained to respond to comments from patients regarding the doctor's fees. The only way that objections can be overcome is to deal with them directly. The office staff should know what to say and how to say it. In many situations all that is required is a simple explanation or justification of the fees.

The staff should also recognize that some comments about charges result from the patient's inability to pay. In these cases it may be appropriate to give the patient a partial courtesy discount, agree to accept insurance assignment, or set up an extended payment plan.

The bottom line on fees is that the reimbursement picture is changing and is likely to continue to change. Paying more attention to the strategies for increased income, not simply raising fees, will be time well spent.

View from the Hill

JAMES E. BRYAN

Many friends of American medicine, and not a few of its critics, have recently suggested that the "incremental approach" to a national health program has had its day in the sun. Although this approach has met some major needs, it has also revealed—and, to some extent, created—even more urgent and complex problems to be tackled if we are to fulfill our national commitment to make first-quality medical care accessible to all Americans.

A prestigious group of physicians and social scientists associated with the Case Western Reserve University School of Medicine, Cleveland, writing in *The New England Journal of Medicine* (October 22, 1987) characterizes "our system of health care" as "one of the longest-lived, most expensive demonstration projects in history—a test of the efficacy of 'free-market' health care," a program that "has never delivered good health care to everyone at a reasonable cost" and that "during the past few years has shown signs of destabilization."

In their opening statement, the Cleveland group declares their belief that "a unitary system—that is a national health insurance program or a national health service—ought to be seriously considered." To my knowledge, this is the first candid and consequential assertion by a prominent medical group of the need to abandon or radically reconstruct the currently complex, confusing and extravagantly financed system of American health care.

A more recent (November 6, 1987) editorial in the commentary section of *American Medical News* asserts, "The array of Medicare legislation now in Congress is clear evidence of the need for basic reform of the entire program. . . . It is time to call a halt to the tinkering." But the *AMN* commentary, reflecting a more constricted range of thinking, suggests that Congress merely enact another contributory tax program. It would, from the start, somehow underwrite the beneficiaries' present and future health costs, with a catastrophic "stop-loss" feature of $2,500 for individuals and $3,750 for couples. This sounds like more "tinkering" to me.

Medicine faces some unhappy circumstances, all of which tend to fuel a growing popular interest in restructuring our health care system:

(1) At the very time when Congress is raising deductibles and reducing benefits for Medicare, and squeezing Medicaid subsidies to the states, *Medical Economics* reports that physicians' net incomes rose an average of 10 percent in 1986, while the consumer price index rose a bare 1.1 percent. Median medical net income was $112,790, up $10,270 over 1985, the biggest annual dollar gain ever recorded. *Medical Economics* comments dryly, "This does nothing to enhance physicians' public image at a time when there's widespread concern over the cost of medical care."

(2) The profession has been weakened in the public esteem by recent revelations of excessive and inexplicable differences in the fees charged for similar or identical procedures in different areas.

(3) Although the Administration's effort to devise a DRG-type of price control for physicians' inhospital services has apparently been abandoned, relative value scales may soon be promulgated, followed by an endless series of hard-nosed negotiations over locally applicable unit values. Such negotiations between the Health Care Financing Administration and representatives of the principal specialties may be required on a regional, state or, possibly, even on a local or county basis. The results can be guaranteed to satisfy absolutely no one, and the price competition pressures will only further aggravate animosities among the principal players on the medical stage.

(4) Predictably, physicians will find their rights of self-evaluation further constricted as a new administration struggles with the need to maintain essential services on reduced appropriations, as well as the need to serve the expanding requirements of a rapidly aging population. The physician's financial autonomy will be ground between tightening pressures of public authorities, industrial cost managers and competitive aggressions of an overpopulated profession.

(5) The profession appears to be losing the good will and, to some degree, the confidence of the largest, fastest-growing and most politically potent group of citizens: the elderly. More than 100 organizations comprising or

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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devoted to the interests of elderly citizens have joined forces to press for various critical reforms in the medical economy. They oppose political efforts to shift larger portions of Medicare costs to the presumed beneficiaries of that program (who now pay more than half the increasing costs of their care), and are urging that fee levels be "frozen" and assignments required. Meanwhile, the profession has received a growing volume of criticism (much of it quite unmerited) for its alleged indifference to the plight of nursing-home residents, especially those in homes operated for corporate profit. The Institute of Medicine, among others, has called attention to the crucial role of the attending physician (particularly the medical director) in improving professional and supportive services for these often debilitated and neglected elderly citizens.

(6) The profession has also been troubled recently by problems that are compounded by economic and professional issues, such as cesarean sections versus vaginal deliveries, and problems compounded by ethical and moral issues, such as the do-not-resuscitate dilemma and artificial insemination.

The demand for radical reform to realize the declared American principle, that access to first-class medical care is a basic human right in our society, is gathering momentum daily. As in the case of Medicare's inception in 1965, the profession would be soundly advised to recognize the inevitable—and shape it.

Posterity may recognize that the flaws and faults of our American medical care "system," since World War II, are primarily chargeable to the society that the American physician has labored to comfort and to heal. Economist Lester C. Thurow has noted that, although the United States is first among industrial nations in percentage of GNP devoted to health care costs, it is far from first in most major indices of public health—and he rightly identifies this as a *social problem*.

It does "say something" about us and our values when we can think of no better way to reduce a scandalous national budget deficit than to cut back on the social necessities of the homeless, the poor, the infants and the elderly. As Thurow puts it, "Our social problem has become a budget problem," or perhaps we are converting our budget problem into a social problem—and a potentially insoluble one.

Preventive medicine, public measures of sanitation, purifying the water, cleansing the air, detoxifying the soil, vaccinating children, feeding and clothing the needy—all of these are social issues. Though politicians, money-men and budgeteers deride expenditures of public funds for such purposes as "domestic expense," from a human development point of view, these are domestic investments in the welfare and security of the American people.

CALL TO CONTRIBUTORS

Members of the Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Authors preparing manuscripts for submission to *Connecticut Medicine* should consult INFORMATION FOR AUTHORS. This material may be obtained from the *Journal* office. Adherence to the instructions will prevent delays both in acceptance and in publication.

Please send them to:

Robert U. Massey, M.D., Editor
Connecticut Medicine
160 St. Ronan Street
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Don't Feud Over the RVS

JOSEPH F. BOYLE, M.D.

From time to time, the American medical profession engages in pitched battles that rival any of history's fabled family feuds. Words may be the weapons, rather than swords or muskets, but the result is still carnage. Often outside pressures precipitate these conflicts that involve matters intrinsic to medical practice.

State legislative initiatives and social pressures led to a decade-long debate over abortion that ended only when the U.S. Supreme Court settled the issue about what constitutes the law of the land. In another instance, separate Supreme Court decisions started and ended a dispute—first by declaring the learned professions subject to all the provisions of the nation's antitrust laws and then by letting stand an appellate court decision involving professional ethics and chiropractic. In the interim, the profession engaged in open warfare over our proper relationship with chiropractors and over changing the code of ethics that had governed professional relationships for nearly 100 years.

Unless reason prevails, we appear headed for a new donnybrook that could tear asunder all semblance of professional unity and any sense of collegiality among American physicians. The issue? A relative value scale and the fee schedules derived from it.

A Fee By Any Other Name

In the early 1960s, many third parties such as private insurance companies and Blue Shield adopted the policy of paying "usual and customary" fees for physicians' services. With the advent of Medicare, the federal government incorporated this concept into a system that the government called "customary and prevailing." The mythology was that physicians would independently determine appropriate fees to charge and that the insuring entities—including Medicare—would recognize that sum for payment so long as it was the physician's "usual" fee ("customary" under Medicare) and was within a range of fees considered "customary" ("prevailing" under Medicare) in the community where the service had been rendered.

After 20 years of paying homage to this holy writ, just about all the participants in the process became dissatisfied for a variety of reasons. A clamor commenced for change. The American Medical Association (AMA) adopted policy in 1983 asking that the usual (customary) and customary (prevailing) be replaced by an indemnity system with payment levels presumably determined by schedules of fixed fee allowances.

Shortly thereafter, the U.S. Congress adopted legislation that directed the Health Care Financing Administration (HCFA) to develop recommendations for physician payment reform—including a study of a method upon which an appropriate schedule of allowances could be based. After considerable pondering, in the summer of 1985, HCFA awarded a contract to Dr. William Hsiao and associates of the Harvard School of Public Health to carry out an AMA-sponsored study to develop a resource cost-based relative value scale.

Although several specialties had misgivings about this study, since one of Congress's purposes in ordering it was to find a means to reduce the disparity between payments for cognitive and procedural services, almost all agreed to cooperate and to give it a reasonable shot. No one agreed to abide by the results including, incidentally, HCFA itself.

A Stream of Complaints

Dr. Hsiao began his process. Almost immediately, distress signals appeared. The methodology is flawed, shouted some. We will try to refine it, said Dr. Hsiao. We would like to participate more fully, said others. We will try to accommodate you, replied Dr. Hsiao. You are asking us to compare services that are not comparable, became the complaint. Try, asked Dr. Hsiao.

He and his co-workers have persisted, and the litany continues. Your database is too small, they say; Dr. Hsiao points out that it is two or three times the size needed for statistical validity—polls of national opinion can be predicted with ±3 percent by sampling no more than 0.004 percent of the electorate. The data are entirely subjective, they say; Dr. Hsiao smiles, agrees, notes that so far the agreement rate among specialists surveyed ranges around 97 to 98 percent, and then he muses that there are hardly any *objective* data by which anyone could deter-

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JOSEPH F. BOYLE, M.D., past president of the AMA and currently executive vice-president of the American Society of Internal Medicine.

This article appeared in the January, 1988 issue of *The Internist: Health Policy in Practice*, an ASIM publication.

mine that procedure *X* is truly worth *Y* dollars. You have not taken into account the vast differences in practice costs and the risks involved, such as the cost of malpractice insurance, etc., etc.; correct, Dr. Hsiao sighs, we do intend to do that, and objective data abound for that.

More recently, some critics who are truly straining have charged that such an RVS is seriously flawed because it does not measure differences in physician skills, experience or competence, outcomes of treatment or severity of illness. Those who make these statements do so with perfectly straight faces as though there were some reimbursement system that had ever reflected these variables. This is then followed by the solemn pronouncement that we would be better served by constructing an RVS around "experience-based" charges. Translation: Let us keep the status quo! Clearly, this is no longer a viable option. Some have suggested that what we really need is a series of relative value scales, one for each specialty, or separate schedules drawn up around regions or some other geographic subdivisions, again based on "experience."

Satisfying the Majority

Although no one now has a concrete notion what the final product of the Harvard group's efforts will look like, everyone seems to know that his or her specialty will be severely disadvantaged. But the preliminary results, as we have seen them, are logical and consistent within specialties. Indeed, the good doctor and his co-workers have been completely open about the process and have freely shared the data as these have been acquired. They have made prodigious efforts to satisfy many of the misgivings about their methodology and have made accommodations to include several specialties not previously involved.

The data collected so far, that I have viewed, are beginning to reflect the relative complexities of problems encountered, relative amounts of time involved, relative degrees of skills required, relative intensities and a host of other relative factors that go into providing physician services. How well these can be integrated into a relative value scale across specialties remains to be seen. Hard data on practice costs and other, related items will be factored into the final formulations. The study is in its final stages and will be reported to HCFA and to the Physician Payment Review Commission this summer—whether anyone wants it or not.

Obviously, ASIM hopes that the relative value scale Dr. Hsiao *et al.* produce will truly represent the relative worth of medical services and procedures. Conversely, we appreciate the apprehensions of some specialists with services that could be found to be *relatively* overvalued in relation to payment schedules now based on historical charges. In addition, we recognize that logic dictates that unless more monies are made available to pay for physician services, achieving parity under a relative value scale will increase the level of reimbursement for some services and decrease it for others.

At the same time, we are convinced that any relative value scale will appropriately take into account the intrinsic worth of most procedures in terms of value to the patient and in recognizing the inherent worth of skills required to perform complex diagnostic and therapeutic services. We also believe that in the process the intrinsic worth of providing cognitive services, both the worth of the skills required and the value to patients, will get more equitable recognition.

Divide and Conquer

Given all that is potentially at stake in resolving this issue, a conflict of Gargantuan proportion could be in the brewing. We had best begin with a resolve at least to try to approach this as a unified profession rather than as a fragmented gaggle of separate interests striving for maximum singular advantage. Now is also the time for the AMA to exert some forceful leadership. Other organizations purporting to represent organized American physicians, eschewing a course of cooperation and compromise, appear to be actively organizing a campaign first to discredit and then to destroy the project before Dr. Hsiao ever makes his final report.

These choreographers of cacophony are not alone in their endeavors. At the beginning of the 1987 budget process, the administration introduced proposals consciously designed to divide the profession by isolating three specialties for payment under diagnosis-related groups (DRGs). During the ensuing legislative skirmish one specialty society, threatened by DRG reimbursement on the one hand and truly distressed by the specter of the Harvard/AMA relative value scale, felt compelled to cut its own deal with some members of Congress.

As a consequence, one member of Congress opined that a "major breakthrough" had occurred because some specialists were now willing to break ranks with the rest of medicine and come forward with *separate* "solutions" to resolve the physician payment problem. Presumably, from this perspective, a decision to stand together would be a step backward!

For our part, ASIM has begun the process of bringing together virtually all the subspecialties of internal medicine—those involved in providing entirely cognitive services (counseling, problem solving, etc.) as well as those versed in probing with catheter and scope—in order to work together as we attempt to achieve equitable treatment for all specialties in any system of reimbursement reform. All of medicine had best enter into comparable dialogue to find internal reconciliation before we start in on some internecine cloning of the Hatfields and the McCoys.

Editorial

Guest Editorial

Regulators: Authority Without Responsibility

At first glance, the massive cuts in health care rates recently proprosed by the state's Commission on Hospitals and Health Care (CHHC), may come as good news to the public. After all, the Commission has done an admirable job of apparently trying to convince Connecticut residents that less is better when it comes to health care. They propose that spending levels in 1988 be actually less than spending levels of 1987. For Hartford Hospital, it would mean spending $171 million in 1988, after having spent $188 million in 1987!

While the millions of dollars in rate cuts recently ordered by the CHHC for 30 hospitals in the state may look impressive to the reader, what the CHHC has failed to tell the public is that these reductions will have a tremendous negative impact on the state's economy: the Commission is well-aware that if hospitals ordered to roll back rates are held to these cuts, hundreds of health care workers will be unemployed within a matter of weeks. And, it is entirely conceivable that over the next two years some of the state's hospitals will close their doors entirely. Even if hospitals negotiate, or indeed litigate a new rate package with the Commission, legal costs as well as the cost in time and wages over the course of these negotiations will take a tremendous toll on the health care system in Connecticut.

At a time when nurses and allied health personnel are in scarce supply, and hospital officials across the nation are literally circling the globe, attempting to recruit these professionals from other countries, the Commission has chosen to ignore what has become a grave problem within the health care industry. They have sent a message to the (fewer and fewer) young people considering nursing or an allied health profession: "Do not practice medicine in Connecticut. The delivery of *quality* health care is not a priority here." Professional burnout is a serious problem among health care providers, and, along with substandard salaries, is directly linked to the critical shortage of young people entering the nursing and allied health fields.

Yet, if the Commission has its way these problems will be overlooked so that it can brag that it has cut the cost of health care in Connecticut. The CHHC has said nothing of what these costs may do to the state's unemployment record. These proposed rate reductions will abolish the way health care is provided in this state; will cost hundreds of health care workers their jobs; will discourage new professionals from coming into Connecticut; and will subsequently force patients to acquire their health care at an even greater expense in neighboring states, something which is already happening to a surprising degree.

Just how effective is Connecticut's heavy-handed regulation? The cost of health care in Connecticut was about equal to the national average prior to the inception of the CHHC in 1973. Today, 15 years later, Connecticut is *still* about average with the nation, at least in terms of costs. The 1986 per capita cost of operating Connecticut's hospitals was $592; basically the same as the average cost throughout the United States ($583). Look what regulation is doing in Massachusetts, as health care professionals abandon that state, after describing it as "the Beirut of Medicine": $789 per capita for hospital care. One can hardly praise the regulatory process for doing a wonderful job. If we look at states where open competition between hospitals is welcomed, rates are lower and services are equal to, or better, than in the five states in America where regulation prevails.

Rather than encourage—indeed *demand*—quality health care in the richest state in the country, the CHHC has adopted policies which directly result in a second-class delivery system for Connecticut's aged and infirmed. The Commission's near-annually recurring inconsistency in the method it uses to establish hospital rates (at least five rate-formula changes in the past eight years), is having a dire effect on hospital operations and staffing in Connecticut. One example of what is happening to those needing hospitalization at Hartford Hospital: presently, patients needing elective surgery must wait up to 45 days for admission to Hartford Hospital because of a severe shortage of personnel. The CHHC however, through its unacceptable answer to dealing with the health care delivery dilemma, is willing to push this wait up to as much as 60 days by demanding a $50 million reduction in Hartford Hospital's 1988 rates. We hear patients and their loved ones continually term the present situation intolerable, and, on a daily basis, voice their objections to the long delays in hospital admissions. Their reaction to a 60-day wait for elective admission would be nothing short of outrage if this hospital and others were required to cut staff even further in order to comply with the Commission's "solution" to rising health care costs.

This broad-brush approach gives the Commission little more than boasting rights before state's citizenry, but hardly paints a total picture of what these cuts will mean to people like the elderly, in need of acute care, or AIDS patients located in a state which has the fastest rising number of AIDS cases in the country. When the upcoming battles between the state's hospitals and the CHHC are settled, if cuts are still imposed, the elderly and critically ill will be the losers.

Editorials are expressions of personal opinion and do not necessarily reflect the policies of CSMS.

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In 1973 the General Assembly founded the CHHC and charged it with the responsibility to work with hospitals to help them control rising health care costs. With little or no input from the state's medical professionals, the Commission has consistently taken a sweeping approach to what it feels is a cure for the health care industry. One has to believe the CHHC intends to exercize its authority to reduce hospital revenue without any responsibility for the results. However, the Commission has done nothing to inform Connecticut residents of what these cuts entail: Nowhere is it noted that a patient in the Hartford area must travel elsewhere for certain services, because of severe backlogs in services, or because the CHHC has chosen not to permit certain services. Nor does the Commission appear to recognize that, at a time when life expectancies are rising, severity of illness levels are increasing proportionately.

Rollbacks in health care costs can be popular among the healthy; of that there can be no argument. However, time and again medical personnel are faced with complaints over bed shortages or the diminishing numbers of providers available to treat extremely sick patients. Many of these complaints come from those who once heralded severe cutbacks in health care delivery costs; some come from those very legislators who voted for the sweeping cuts. One's priorities change when the service is needed. It is no secret that to the statisticians, a life is merely a point on a chart; to the individual that life is of infinite value.

It is difficult to get people to rally to a cause which contains so many negative connotations: injuries, illness, even death. Coupled with the term "excessive costs," it is not surprising that most people would see a regulatory agency such as the Commission as a vital necessity to the health care delivery system. Indeed, regulation has been endorsed among those in the hospital industry, and most hospital officials would admit that the Commission *could* serve as a valuable cog in the state's health care wheel.

However, the initial theory behind a regulatory Commission was that through a harmonious working arrangement with the state's hospitals, both the public and private sectors would become the benefactors of a well-run medical care system; that Connecticut would treat its ill and injured in a first-class manner befitting the state's fiscal position. Instead, the result has become an annual struggle between health care institutions and a state agency that behaves as though it has no responsibility for outcomes. One must argue that the Commission has not involved itself with these problems; rather, it has taken the easiest, least thought-out and most self-serving approach available: arbitrarily cutting hospital costs while letting those most in need of treatment suffer the consequences.

John J. Meehan

President and chief operating
officer of Hartford Hospital

A shorter version of this editorial appeared on the op-ed page of the Hartford *Courant*, 28 January 1988.

SPECIAL NOTICES

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TRAUMA SYMPOSIUM

April 20, 1988

A Symposium entitled, Advances in Management of the Acute Trauma Patient will be held in Farmington, Connecticut at the American Red Cross Connecticut Region on Wednesday, April 20, 1988 from noon to 5 p.m. (Lunch included with pre-registration). The Symposium will stress appropriate use of blood components during resuscitation both at the accident scene and in the hospital. It is jointly sponsored by Yale University and the American Red Cross Connecticut Region.

Contact Office of Graduate and Continuing Education, Yale University School of Medicine, 333 Cedar Street, P.O.B. 3333, New Haven, CT 06511; or call (203) 785-4578.

The President's Page

Relative Value Scale

While flying to the American Medical Association's "Leadership Conference" in Chicago in early February, I scanned through a pile of newspapers that I had not had time to read at home with the hope of finding timely issues to address in future "President's Page" articles. Sure enough, I came upon an article that seemed promising. In the *Wall Street Journal*, Harry Schwartz, a well known medical writer, had a provocative article captioned "Physicians' Not-So-Civil-War."

The article reviewed, for better or worse, the media's preoccupation with the incomes of medical physicians, depending on the media's bias and whether or not it was inured to the high incomes of people in TV, professional sports or Wall Street—or even the Senate and House aids whose 20% pay raises this year have them earning more than cabinet members, admirals, generals, and most general practitioners. Mr. Schwartz indicated that the media had missed the real story about the AMA's announcement that physicians' incomes, before taxes, averaged $119,500 in 1986.

The real story was that there was a huge difference in the taxable income of the various medical specialties, with general practitioners being on the low end averaging $80,300, and the higher income specialties ranging between $162,400 and $168,500—both groups being respectively about 33% below and above the average—with the internists averaging $109,000.

Mr. Schwartz then reviewed the efforts of some of the specialties to obtain higher allowances for their services from Medicare and how those efforts seemed to have been used to advantage by the U.S. Congress to reduce Medicare expenditures by averaging the more highly reimbursed specialties considerably downward while averaging the lower reimbursed specialties only slightly upward. This "balancing act" may be further fine-tuned by the possibility of adopting of a study contracted for by the Health Care Financing Administration (HCFA) at the direction of the Congress and being done by Dr. William Hsiao and associates at the Harvard University School of Public Health.

The study uses as its basis a resource cost-based Relative Value Scale (RVS), a scale similar to the one in California that was outlawed some twenty years ago by the U.S. Supreme Court as being anti-trust.

The sum total of Mr. Schwartz' column is that adoption of RVS may be potentially very divisive to organized medicine with resultant loss of physicians' political power. I am—as Mr. Schwartz and many others are—concerned about this. For, if such division does come about, as many of organized medicine's antagonists would like to see, medicine, as we know it, will be no more. Our patients will be at the mercy of those who would use costs to ration care. We already have a two-tiered reimbursement system, and socialized medicine will be here in all but formal name.

At the Legislative Council sessions which I participated in while in Chicago, I brought Mr. Schwartz' article to the Council's attention when the RVS study was being discussed. Sitting next to me at the Council was Joseph F. Boyle, M.D., past president of the American Medical Association and presently executive vice-president of the American Society of Internal Medicine. He spoke to the issue of RVS and asked that organized medicine wait for the study before making any judgments. He indicated that it may not even be acceptable to HCFA which had contracted for the study. Dr. Sammons, AMA's executive director, closed the conference warning the attendees that organized medicine must stand united. Divided, it will fall—as many in Washington would like.

When I returned from the conference, I had in my mind the basis for this column and started to put it together. However, coincidentally, *Connecticut Medicine* received a copy of an article on the subject of RVS, "Don't Feud Over RVS," written by the same Dr. Boyle who had sat next to me in Chicago. Reading it, I found that it already said what I had planned to express here. Upon further discussion with Robert U. Massey, M.D., *Connecticut Medicine's* editor, it was felt that Dr. Boyle's article would be of interest to our readers. I hope that you all read "Don't Feud Over RVS" (reproduced elsewhere in this issue of *Connecticut Medicine*) and think about the issues presented. Also, may I suggest reading Harry Schwartz' article, "Physicians, Not-So-Civil-War," *Wall Street Journal,* February, 1988.

James P. Orphanos, M.D.
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Reflections on Medicine

The History Elective

ROBERT U. MASSEY, M.D.

Three of us have been teaching an elective in the history of medicine for first-year medical students for eight years or so; on the first day we get them to talk about history even though their knowledge, especially of medical history, is remarkably meager. We've gotten used to that: the past is defined for them by great stretches of time called prehistory, the Egyptians, the Greeks and Romans, the Dark Ages, and Modern Times, this last a static period extending backward an indeterminate time to "The War." That limited perspective is not their fault; for most of them their last encounter was a sanitized value-free course in American or European history seven years earlier, mostly forgotten as undoubtedly it should have been.

Our purpose is to let them in on the past, especially medicine's past, so that they can compare and contrast the present with other times and other places, and come to see things that they are just now learning about in ways they might otherwise not be conscious of; to give the flat present a third dimension. History does not explain the present but it tells something about it. Here we get them to talk about purposes, why they are interested in the past, what they expect, and hope, to learn from the course.

By the end of the course each student is required to have done a small piece of original historical research using primary sources. Medical libraries are rich in such materials, since they have journals and old texts, many running back to the beginning of the century or before; our region is full of venerable institutions, archives, and historical libraries. We also want them to learn how to use, or access, the resources of the National Library of Medicine, especially its historical collection, Histline.

Sooner or later in that first session we begin trying to define history: is it everything that was? Or is it limited to the hard evidence of the past, the record, so that everything that happened without leaving a trace is gone forever, as though it had never been? Or is history merely what is written about the past by historians, combining evidence, assumptions, hypotheses, and biases; a kind of literary form, picking and choosing among the remnants to tell an entertaining tale. If so, nothing keeps it from being rewritten every generation or so, recalling George Orwell's lines: "Who controls the past controls the future: who controls the present controls the past."[1]

Is not the past fixed for all time? as the historian G.R. Elton suggests when he writes that historians have an advantage over natural scientists who, in the act of observing nature, change it, and hence can never see things quite as they are.[2(p72)] The past is beyond reach, finished forever; all we can do is describe it, analyze it, draw conclusions from it, but we will never alter it. If history can be altered, and the past not, the two are not synonymous. Students need to recognize that anyone writing history with an objective other than verifiable truth is story-telling at best, spreading dangerous propaganda at worst. This applies even to writing about medical progress.

Because one of us is a real historian, this matter of progress is bound to come up. History is about change, events, and particulars.[2(p21)] Some change *is* progress, by anyone's measure; no one seriously doubts the advantages of today's medicine over that of 1888, or 1788, at least most of it. But has there been progress in art, music, or literature, or only change? What about politics, the law, education, customs, manners, and ethics? Agriculture, commerce, banking? Better now than then, or merely the ebb and flow of change? And if better, in whose terms, and for whom?

For medical students all of this is a relief from the avalanche of 1980s science that has been falling on them since August, if only they can bridle their anxiety long enough to enjoy it.

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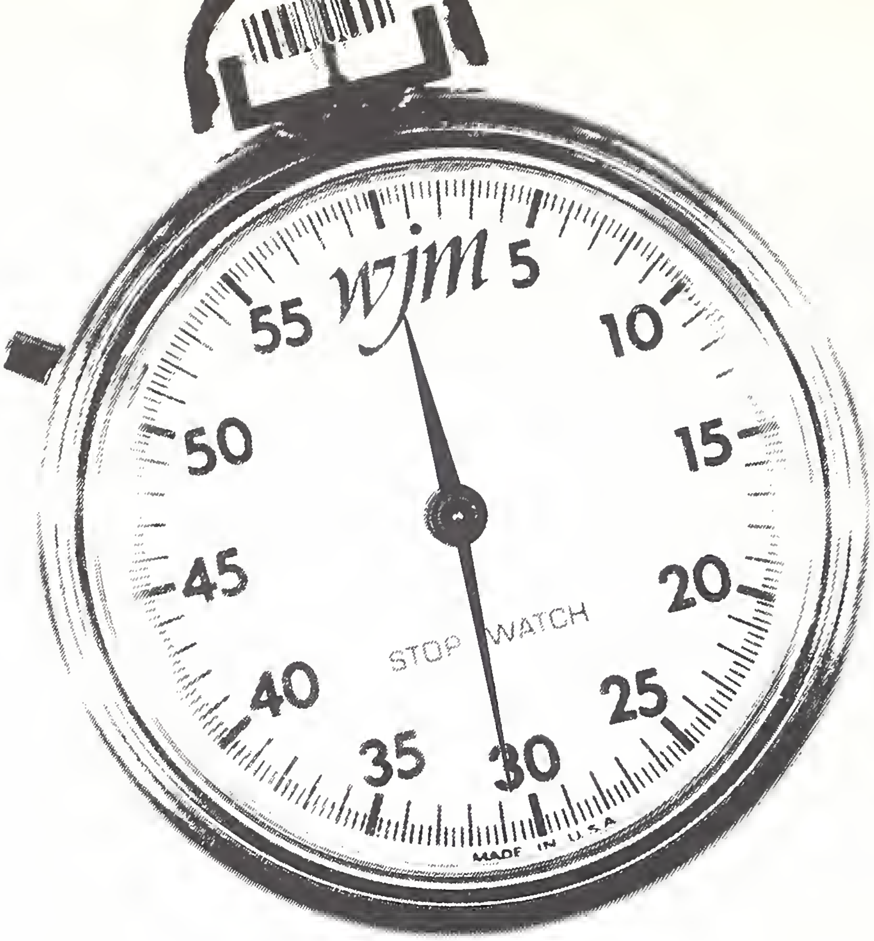
2. Elton GR: *The Practice of History*, 1968, Glasgow, William Collins & Son, Ltd.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.



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LAW, MEDICINE AND PUBLIC POLICY

Is There a Duty to Treat AIDS Patients?

JOSEPH M. HEALEY, J.D.

In my three most recent columns, I explored the tension which exists between a physician's duty to preserve confidentiality and a simultaneous duty to protect potential victims from transmission of HIV infection by the physician's patient. Though many aspects of this issue remain uncertain, there appears to be a growing consensus that a physician's duty to protect third parties can and often does override the duty to maintain absolute confidentiality. The discussion of this tension usually presumes the existence of a doctor-patient relationship. A second, more basic source of concern involves the nature of the physician's initial duty to enter into relationships with patients who are HIV antibody positive, have ARC, or have AIDS. Must physicians provide such care? May physicians refuse to treat a patient because of the disease or condition with which the patient is afflicted? These questions are being asked with increasing frequency and provide an opportunity to review the basic legal and ethical principles governing the physician-patient relationship.[1]

An important starting point for analyzing a physician's legal obligation to care for patients is the law's characterization of the relationship as a contractual relationship. This means that generally speaking physicians and patients voluntarily enter into the relationship and that neither can be forced to provide or receive health services. In part, such a policy reflects the reluctance of the Anglo-American legal system to impose duties of service upon professionals. In part, such a policy recognizes the adverse effects of forcing a reluctant physician to provide care to a patient. It is not clear that the well-being of the patient will be always served by compelling an unwilling physician to treat the patient. In fact, the patient may actually be harmed by such an encounter. There are exceptions to the general principle of voluntariness. The largest group of exceptions involves a waiver by the physician. A physician may waive the right to select patients by entering into an agreement with a health facility or practice arrangement that results in the imposition of a duty to care for patients assigned by the employer or agency. Physicians in such situations are often satisfying the institution's obligation to provide care. But the basic principle remains clear! Exceptions aside, under the contractual dimension of the doctor-patient relationship, the physician has no general legal duty to care for any patient, including those with specific diseases or conditions such as the presence of HIV, ARC, or AIDS unless the existence of a doctor-patient relationship has been established.

There exist, however, other potential sources of a duty to treat beyond that of the contractual dimension of the physician-patient relationship. State statutes designed to protect the handicapped, members of groups with high incidence of HIV, ARC, or AIDS, or any person with HIV, ARC, or AIDS could be a source of legal restrictions prohibiting either inappropriate failure to establish a physician-patient relationship or inappropriate termination of a relationship. As a condition of licensure, the state could impose upon physicians a duty to treat patients without consideration of their disease status. Hospitals could impose a requirement that physicians as a condition of staff privileges agree to provide care regardless of the patient's disease or condition. Though some hospitals are moving to require this latter concession from physicians, in general all of these potential sources of a legal duty have been underutilized.

In the absence of substantial legal guidelines, the focus has shifted from the legal sources of a duty to treat to the ethical sources of such a duty. Of particular interest are the guidelines developed by the American Medical Association. In my next column, I will explore these ethical sources and discuss their relationship to legal sources.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

REFERENCE

1. A useful volume for those interested in legal issues arising out of AIDS is Dalton HL, Burris S, and the Yale AIDS Law Project, eds., *AIDS and the Law: A Guide for the Public,* New Haven, Connecticut, Yale University Press, 1987.

AROUND THE STATE

From Hartford County Medical Association, Medical Review Committee

How To Avoid Complaints

There are no hard and fast rules which guarantee physicians freedom from complaints. The following suggestions may help, however, as they are based on actual cases heard by the HCMA's peer review committees.

1. Communicate with your patients. Listen to their concerns, and let them know by your attitude and body language that you care. Take the time to make sure that they hear and understand what you are saying. Help them become active partners with you in their health care.
2. Carefully document patient care.
3. Inform patients in advance of any changes in your payment policy.
4. Train your office staff to inform patients who are waiting how long it will be until they are seen. This should be done as soon as the patient arrives in the office and at least every 30 minutes thereafter. If you are running more than an hour behind, consider having your office staff phone patients about the delay.
5. Review patient patterns from time to time to guard against overscheduling appointments.
6. Have a female staff member present when you examine a female patient.
7. Release medical records (including prescriptions for medication, eyeglasses, contact lenses) to any patient who provides written authorization *regardless* of whether the patient owes you or not.
8. Complete insurance forms promptly.
9. Use care when choosing words to make notations in patient charts so that patients who later see their medical records do not construe your comments as judgmental or prejudicial.
10. Avoid making flippant remarks to patients, since this might lead them to believe you are an uncaring physician.
11. Do not use terms of endearment in addressing your patients. Unless it is obviously appropriate to use a first name, address each patient as Mr., Mrs. or Miss. If you call patients by their first names, be prepared to be addressed by your first name in return.
12. Have a clear understanding with the patient about fees before starting treatment.
13. Take the initiative to dismiss problem patients.
14. Follow HCMA guidelines when dismissing a patient.
15. Refrain from criticizing the work of other physicians in the presence of patients.
16. Be explicit when you explain to the patient the need for a consultant and the fee involved.
17. Open your office door periodically and listen to the manner in which your staff handles patients, both on the phone and in person.
18. Keep informed on problems experienced by members of your office staff, and periodically meet with them to agree on solutions.

BOOK REVIEW

Sutured Words: Contemporary Poetry About Medicine

Edited by Jon Mukand, M.D., Brookline, MA.,
Aviva Press, 1987. 424 pp. $18.00.

Congratulations to Jon Mukand for a fine accomplishment. Between the covers of *Sutured Words* lies a rich storehouse of language and feelings which stretches across the vast arenas of man, his dis-ease, and his caretakers. Mukand, a physician, a poet, and a literary critic, brings to the readers of this anthology a fine blend of his broad talents. This editor tells us that he has spent many hours reading and digesting the works of contemporary poets in order to collect "good and enjoyable" poems. The poems he has chosen are the reflections of those who have experienced ill health from one or more vantage points.

Each of the more than two hundred short poems speaks for itself. The collective quality of the works selected is very high. Among the poets represented there are many familiar names and some not so well known, but equally deserving. Mukand, by his choices for inclusion in this anthology, demonstrates his own awareness of poetic power and excellence. There is something in this collection for every person who has had an encounter with illness or with the health care system—whether as a patient, as a provider, or as a concerned observer.

Mukand does more, however, than collect the talent of others. He organizes thematically and he adds some of his own poems. As an editor, Mukand introduces each of his nine catagories of poetry about medicine with a narrative summary which justifies the catagory and supplies some interpretation of the individual works. By beginning with the editor's explication the novice comes better prepared to appreciate the direction of the poems included in each section. This guidance offered by the editor is both scholarly and gently directive. The broad range of these catagories is refreshing. It acknowledges the complexity of the interface between medicine and literature without being restrictive or didactic.

This reader was particularly struck by the dominance of modern technology—and fear of same—as a theme in the collection. Those events which the modern physician takes as commonplace become, when viewed by the patient or nonmedical observer, the nidus for panic. If nothing else comes from reading this collection, an appreciation of patient perspective may serve to reinforce a humbling humanity in those of us who order tests and make rounds.

Dr. Mukand contributes a small number of his own poems to *Sutured Words*. The physician viewpoint dominates these works, but the poet also experiments with other perspectives. Mukand inserts into his own poems a mix of vulnerable humanity and humane doctor.

Who will make up the audience of *Sutured Words*? Teachers of medicine and literature will be delighted with the work done for them by Mukand. Lovers of twentieth-century poetry may find works they had not previously read. The physician and his patient can both enjoy and relate to the content of the anthology. Thank you, Jon Mukand.

Janice L. Willms, M.D.

Farmington, CT

196th ANNUAL MEETING
# of the
CONNECTICUT STATE MEDICAL SOCIETY
May 4, 5, 1988
Ramada Inn
275 Research Parkway
Meriden, Connecticut

COMMITTEE ON PROGRAM OF THE SCIENTIFIC ASSEMBLY

Norman J. Marieb, M.D., Chairman
James D. Kenney, M.D.
Dennis L. Bordan, M.D.
John M. Gibbons, M.D.

A MESSAGE FROM THE PRESIDENT

The 196th Annual Meeting of the Connecticut State Medical Society will afford all members of the Society an opportunity to participate in some of the programs. The House of Delegates will meet on Wednesday, May 4, 1988 to transact the business of the Society, which will include action on the reports of Officers and Chairmen of Standing Committees, resolutions from county associations and individual members, and election of officers and committees for the coming year.

The House of Delegates is open to all members of the Society and members attending, who are not official delegates, may attend and speak at reference committee hearings, where most of the items of business coming before the house will be discussed. This is an excellent opportunity for members to express their opinions freely and to observe their elected representatives in action, doing their best to deal effectively with the rapidly changing legislative, economic and social issues of the day in relation to the care of the patient.

The scientific programs will be held on Thursday, May 5, 1988. This year a new format will be followed, which will include late morning meetings of half of the specialty sections, lunch with one speaker, and then the convening of other specialty sections following the speaker. The luncheon speaker will be Attorney Rodney D. McGalliard from Gainesville, Florida, who is a malpractice attorney and who has had a great deal of experience in this field and also has written extensively on this subject. Members of CSMS are invited to be the guests of the Society at luncheon, but it is imperative that advance reservations be made by returning the card which is enclosed with the program.

This program is planned for the benefit of the membership and you are urged to make every effort to attend this meeting.

James P. Orphanos, M.D.

GENERAL INFORMATION READ CAREFULLY

REGISTRATION

The registration desk will be located in the lobby of the Inn and everyone attending the meeting is requested to register. There will be no charge for registration.

PARKING

There are ample parking facilities.

TELEPHONE

Telephone messages will be received at Meriden, 238-2380.

LUNCHEON

Luncheon will be served in the Ballroom. MEMBERS OF THE SOCIETY WILL BE GUESTS OF THE SOCIETY. ADMISSION TO THE LUNCHEON WILL BE BY ADVANCE RESERVATION ONLY. If you plan to attend the luncheon, it is of the utmost importance that the card enclosed with the program be returned at once. See program for details on the luncheon speaker.

HOTEL ACCOMMODATIONS

Persons who wish to stay overnight at the Inn should make room reservations as soon as possible. Please indicate in your letter that you are attending the Connecticut State Medical Society Meeting.

PROGRAM

The House of Delegates will be held on May 4th and the scientific program will be held on May 5th. The scientific program will be concentrated in one day, May 5th. A new format will be presented this year. Rather than having general scientific sessions, there will only be one speaker at luncheon, with sections meeting in the morning and afternoon.

PRESIDENT'S INAUGURATION

The inauguration of the new President will take place at the House of Delegates meeting on May 4th, at about 4:00 P.M. All members are invited to attend the inauguration. A reception for the President will be held immediately following the close of the meeting.

EXHIBITS

All the exhibits will be located in one section of the ballroom. Physicians should take advantage of the opportunity to review what is new and timely by visiting the commercial exhibits.

ALL ACTIVITIES WILL TAKE PLACE AT THE RAMADA INN UNLESS OTHERWISE INDICATED

HOSPITAL RESIDENTS, INTERNS AND MEDICAL STUDENTS ARE CORDIALLY INVITED TO ATTEND THIS MEETING

ANNUAL MEETING OF THE HOUSE OF DELEGATES

WEDNESDAY, MAY 4, 1988

BALLROOM

Presiding:

Lawrence B. Ahrens, M.D., *Newington, Speaker of the House*

Mehdi S. Eslami, M.D., *Waterbury, Vice Speaker of the House*

9:30 REGISTRATION OF DELEGATES

10:00 CALL TO ORDER
REPORTS OF OFFICERS, COMMITTEES, OTHERS
OLD AND NEW BUSINESS
REFERENCE COMMITTEE HEARINGS

1:00 LUNCHEON

2:00 CALL TO ORDER
PRESENTATION AND AWARDS
REPORT OF THE CSMS AUXILIARY
ADDRESS OF THE PRESIDENT
James P. Orphanos, M.D., Greenwich
ELECTION OF OFFICERS AND COMMITTEES
INAUGURATION OF NEW PRESIDENT
Norman A. Zlotsky, M.D., Rockville
INAUGURAL ADDRESS
AWARD TO PAST PRESIDENT
REFERENCE COMMITTEE REPORTS
INTRODUCTION OF GUESTS
RECEPTION TO FOLLOW

SCIENTIFIC PROGRAMS

THURSDAY, MAY 5, 1988

9:00 REGISTRATION—LOBBY

MORNING SECTION PROGRAMS

SECTION ON EMERGENCY MEDICINE

10:00 Fairfield Room

President: Carl S. Werne, M.D., New Britain
Secretary: Richard Lavely, M.D., New Haven

IDENTIFICATION OF THE RATE LIMITING STEPS IN PATIENT FLOW USING QUEUEING THEORY AND COMPUTER SIMULATION

RICHARD LAVELY, M.D., M.S., M.P.H., NEW HAVEN; Medical Director, Temple Urgent Care, New Haven

NEW DEVELOPMENTS IN CPR AND ACLS

CARL S. WERNE, M.D., NEW BRITAIN; Director of Emergency Room, New Britain General Hospital

CURRENT PROBLEMS IN OLD SEXUALLY TRANSMITTED DISEASES—SYPHILIS AND CHANCROID

CARL S. WERNE, M.D., NEW BRITAIN

SECTION ON NEUROLOGY

10:00 Jericho Room

President: Jan H. Mashman, M.D., Danbury
Secretary: James O. Donaldson, M.D., Farmington

CAUSE AND TREATMENT OF ECLAMPTIC CONVULSIONS

JAMES O. DONALDSON, M.D., FARMINGTON; Associate Professor of Neurology, University of Connecticut School of Medicine

SECTION ON OTOLARYNGOLOGY

10:00 Brunswick Room

President: David R. McKee, M.D., Stamford
Secretary: Gerald Leonard, M.D., Farmington

10:00 UNUSUAL COMPLICATIONS OF T&A
ROBIN COTTON, M.D., CINCINNATI; Director, Department of Otolaryngology and Maxillofacial Surgery, Childrens Hospital Medical Center, Cincinnati; Professor of Otolaryngology and Maxillofacial Surgery, University of Cincinnati

11:00 RECONSTRUCTION OF THE DIFFICULT AIRWAY IN CHILDREN
ROBIN COTTON, M.D.

12:00 LUNCHEON—Ballroom
Guest Speaker arranged by Connecticut State Medical Society—Reservations only.

2:30 MODERN DAY SURGERY ON NASAL TIP
ROBERT SIMONS, M.D., MIAMI; Past President, American Academy of Facial Plastic and Reconstructive Surgery

3:15 AVOIDING COMPLICATIONS IN SURGERY FOR THE AGING FACE
ROBERT SIMONS, M.D.

4:00 BREAK

4:15 PANEL DISCUSSION—CONTROVERSY IN AGING FACE SURGERY
JULIAN HENLEY, M.D., NEW HAVEN; MODERATOR
STEVEN LEVINSON, M.D., FAIRFIELD
MARTIN SPINELLA, M.D., WATERBURY

SECTION ON PEDIATRICS

10:00 Guilford Room

President: Maurice Wakeman, M.D., Guilford
Secretary: Leonard Krassner, M.D., Wallingford

PRACTICAL APPROACH TO PEDIATRIC ACCIDENT PREVENTION

LEONARD S. KRASSNER, M.D., WALLINGFORD; Medical Director, Choate Rosemary Hall; Professor of Clinical Pediatrics, Yale University School of Medicine

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SECTION ON PHYSICAL MEDICINE

10:00 Hanover Room

President: Mary L. Sipski, M.D., Wallingford
Secretary: Thomas E. Lammertse, M.D., Wallingford

REHABILITATION TECHNOLOGY
Speaker to be announced

SECTION ON PSYCHIATRY

10:00 Ivoryton Room

President: Alfred Herzog, M.D., Hartford
Secretary: Gordon I. Kuster, M.D., Orange

BUSINESS MEETING

SECTION ON INTERNAL MEDICINE

12:30 Ballroom

President: Robert M. Stark, M.D., Greenwich
Secretary: Andrew C. Wormser, M.D., New Haven

LUNCHEON MEETING

The program arranged by CSMS will serve as the Section's program. Guest speaker will be Attorney Rodney McGalliard, Gainesville, Florida, who will speak on malpractice litigation. Reservations must be made for this luncheon.

GENERAL PROGRAM

12:30 LUNCHEON Ballroom

(All members of CSMS invited, admittance by reservation only)

GUEST SPEAKER: RODNEY D. MCGALLIARD, ESQUIRE, GAINESVILLE, FLORIDA: Member of the Academy of Florida Trial Lawyers and the Academy of Trial Lawyers of America; Past President of the Bar Association for the Eighth Judicial Circuit. He has been admitted to practice in all the courts of Florida as well as the U.S. Supreme Court and the lower Federal courts. Most of his professional time has been devoted to civil trial practice with special emphasis in medical malpractice and products liability claims.

SUBJECT: AVOIDING MEDICAL MALPRACTICE LITIGATION

AFTERNOON SECTION PROGRAMS

SECTION ON ALLERGY

6:00 Guilford Room

President: Anthony V. Piccirillo, M.D., Wallingford
Secretary: Jeffrey D. Miller, M.D., Danbury

6:00 Social Hour

7:00 Dinner
GUEST SPEAKER: ANTHONY REBUK, M.D., CANADA

SECTION ON ANESTHESIA

5:00 Danbury Room

President: Richard B. Lilly, M.D., Hartford
Secretary: James J. Brakoniecki, M.D., Hartford

4:00 Executive Committee Meeting

5:00 General Business Meeting

7:00 Reception

7:30 Dinner:
PROGRAM—ANESTHESIOLOGY CASE CONFERENCE
MODERATOR—JAN EHRENWERTH, M.D., Department of Anesthesiology, Yale University School of Medicine

SECTION ON OPHTHALMOLOGY

2:30 Ivoryton Room

President: Peter C. Donskik, M.D., West Hartford
Secretary: Paul R. Mitchell, M.D., Hartford

BUSINESS MEETING

SECTION ON PATHOLOGY

2:30 Hanover Room

President: Rebecca L. Johnson, M.D., Hartford
Secretary: Dennis G. O'Neill, M.D., Manchester

SURGICAL PATHOLOGY OF SALIVARY GLAND TUMORS: AN UPDATE
RAYMOND MELROSE, D.D.S., LOS ANGELES; Professor of Oral Pathology, University of Southern California School of Dentistry.

SECTION ON PROCTOLOGY

2:30 Fairfield Room

President: Steven Hirshorn, M.D., Bridgeport
Secretary: Charles W. Littlejohn, M.D., Stamford

THE TIERSCH PROCEDURE FOR RECTAL PROCCIDENTIA
CHARLES W. LITTLEJOHN, M.D., STAMFORD

SECTION ON UROLOGY

2:30 Jericho Room

President: James F. Walsh, III, M.D., Bridgeport
Secretary: Haik Kavookjian, Jr., M.D., Stamford

BUSINESS MEETING

IMPORTANT – PLEASE NOTE

The following Sections of the Society will either not be meeting at the Ramada Inn or are meeting on a different date. Following are the dates, times and locations of these meetings.

SECTION ON GASTROENTEROLOGY

May 5, 1988

Gaetanos' Restaurant, Civic Center, Hartford

4:30 Speaker
JOHNSON L. THISTLE, M.D., ROCHESTER; Professor of Medicine, Mayo Medical School; Consultant in Internal Medicine and Gastroenterology, Mayo Clinic
SUBJECT—"NEWER METHODS OF GALLSTONE TREATMENT"

5:30 Social Hour

6:30 Dinner (by subscription)

SECTION ON ORTHOPEDICS

May 12, 1988

Ramada Inn, Meriden

3:30 PSYCHOLOGICAL STRESS IN THE ORTHOPEDIC PATIENT
JONATHAN SMITH, PHD, CHICAGO; Academy Institutional Course Lecturer in Chicago

5:00 Business Meeting

5:30 Social Hour

6:30 Dinner

SECTION ON DERMATOLOGY AND DERMATOLOGIC SURGERY

May 18, 1988

Ramada Inn, Meriden

12:00 Business Meeting

12:30 Luncheon

1:00 Guest Speaker
RICHARD K. SCHER, M.D., NEW YORK; Professor of Dermatology, Columbia Presbyterian Medical Center.
SUBJECT – "DIAGNOSIS AND TREATMENT OF ONYCHOMYCOSIS"

SECTION ON OBSTETRICS AND GYNECOLOGY

This group will not meet, due to a conflict with a meeting in Boston. The Connecticut Society of American Board Obstetricians & Gynecology invites all obstetricians to be their guests in Boston. Time and place to be announced.

SPECIAL NOTICES
CONTINUING MEDICAL EDUCATION CREDITS

AMA PHYSICIANS RECOGNITION AWARD

As an organization accredited for continuing medical education by the Affiliation Committee for Continuing Medical Education, Yale University School of Medicine certifies that this program is acceptable for Category I credit as specified by the American Medical Association for the Physicians Recognition Award. Credit is granted in this category on an hour for hour basis.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

The Commission on Education of the AAFP has accredited the scientific program of the Society's Annual Meeting for one hour of prescribed credit for the general lecture and one and one half hours of elective credit for each lecture attended which is presented by the individual specialty sections of the Society.

TECHNICAL EXHIBITS

Our exhibits contribute to the value of our assembly by presenting goods and services of interest and importance to physicians. Personal visits to the booths will increase your understanding of the materials and programs on display.

Connecticut Bank and Trust Company, New Haven, Connecticut
Connecticut Medical Insurance Company (CMIC), Wallingford, Connecticut
Data Systems of Connecticut, Milford, Connecticut
M.D. Health Plan, New Haven, Connecticut
Merck & Company, Inc., West Point, Pennsylvania
Travelers-Medicare, Wallingford, Connecticut

The Connecticut State Medical Society acknowledges with thanks educational program grants received from:
Ayr Insurance Agency, Hamden, Connecticut
Geigy Pharmaceuticals, Summit, New Jersey

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

ANESTHESIOLOGY

Anesthetist wanted part-time for ambulatory eye surgicenter; pleasant environment. Send current curriculum vitae to Eye Associates, 255 W. River St., Milford, CT 06460.

EMERGENCY MEDICINE

Several full-time positions available in expanding Emergency Department serving a relatively small, very pleasant greater Hartford area community hospital. BE or BC internists, family practitioners and emergency medicine trained physicians given equal consideration. Competitive salary with a full benefit package. Send CV to: Bradley Memorial Hospital, Personnel Dept., 81 Meriden Ave., Southington, CT 06489.

Park City Hospital in Bridgeport, CT is seeking full-time Emergency Medicine physician. Twenty-six thousand E.R. visits with Industrial Medical Center in E.R. Active Paramedic Program. Certification in ACLS and experience in Emergency Medicine required. First year compensation $96,000 with attractive benefit package. Send current CV to: Don Rankin, M.D., Emergency Department, Park City Hospital, 695 Park Ave., Bridgeport, CT 06604 or call (203) 579-5040.

INSTITUTIONAL AND INDUSTRIAL MEDICINE

Occupational physician needed 8-12 hours per week. Specialty chemical manufacturing division of major pharmaceutical firm seeks an independent contracting physician as a medical doctor. Must possess M.D. or D.O. degree, current unlimited Connecticut license and be a U.S. citizen. Will consider general and primary care background. Compensation commensurate with training and experience. Forward resume in confidence to: Gary Lehrer, The Upjohn Co., 410 Sackett Point Rd., North Haven, CT 06473. EEO employer M/F/V/H.

INTERNAL MEDICINE

Medical practice for sale. BC internist will be retiring during the summer of 1988. Modern office in a modern office building with private parking, close by the New Britain General Hospital, a teaching hospital of University Connecticut Medical School. Excellent group coverage available. Contact Dr. Sidney E. Eisenberg, 33 Lexington St., New Britain, CT 06052. Call evenings (203) 229-6982.

INTERNAL MEDICINE/GENERAL PRACTICE

Established New Haven Internal Medicine/General Practice, professionally appraised $90,000; for sale @ $75,000 to allow owner to take another job. Includes new furniture and high quality equipment (X-ray, spirometer, blood testing machine, EKG, typewriters, dictaphone, telephones, etc.). Grosses $175,000/yr on a 20 hr/wk schedule. Growth potential unlimited. Will introduce for desired length of time. Lease available. Write, CSMS, c/o Box DS.

MISCELLANEOUS

Fee-basis, part-time, physicians needed to assist in physical examinations at the New Haven Military Entrance Processing Station. M.D.'s, D.O.'s, licensed in Connecticut, DC or PR. $125.00/$150.00 for approximately 2½ hours of work. Call Dr. Gerhard Mack, (203) 787-3823 or write: Commander, New Haven MEPS, 150 Court St., (4th floor), New Haven, CT 06510-2056.

Internist/Family Practitioner/General Practitioner. Excellent opportunity in suburban Hartford area. New office space available. Send inquiries to CSMS, c/o MISC/CA.

PEDIATRICS

BC/BE well-trained pediatrician wanted to join long and well-established solo practice in central Connecticut. Located in attractive community with excellent hospitals and medical school. Early partnership. Send CV and references to CSMS, c/o PED/EA.

PRIMARY CARE

Full time/part-time physicians for walk-in medical services. West Haven and Milford. Write, CSMS, c/o PC/BY.

Excellent opportunity for primary care physician to join physician, cross coverage group while enjoying independent practice in rural New England setting. Modern, well-staffed 250 bed acute care hospital. Good office space with well-established patient base. Centrally located—less than two hours from Boston and New York City. Excellent educational opportunities. Send resume to: N.J. Seguljic, M.D., P.C., P.O. Box 442, Terryville, CT 06786. (203) 583-1605.

BE or BC Primary Care Internist needed to join a busy, lucrative internal medicine group, located off Interstate 395 in Northeast Connecticut in a newly constructed building with in-house X-ray and laboratory facilities. Send CV to CSMS, c/o Box LQ.

RADIOLOGY

Excellent opportunity in independent practice, Diagnostic Radiology, in a small general hospital, Northwestern Connecticut. Candidate should be a diplomat of the American Board of Radiology in Diagnostic Radiology and qualified in CT, Diagnostic Ultrasound and Nuclear Medicine. Excellent compensation with opportunity to acquire equity interest in practice. Send CV to CSMS, c/o RAD/NR.

(continued on page 195)

YOCON®
YOHIMBINE HCl

Description: Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

Action: Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

Indications: Yocon® is indicated as a sympathicolytic and mydriatric. It may have activity as an aphrodisiac.

Contraindications: Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

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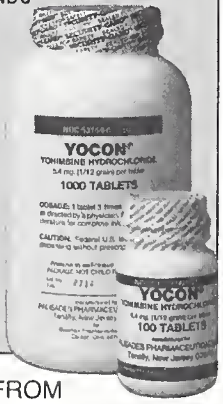

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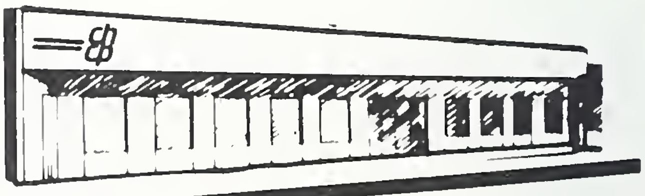

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Outpatient Treatment of Uncomplicated Pneumothorax

SETH BLANK, M.D., RONALD PONN, M.D., HAROLD STERN, M.D.,
ALLAN TOOLE, M.D., RALPH DENATALE, M.D., RICHARD SHAW, M.D.,
WILLIAM SCOTT, M.D., AND RICHARD D'AGOSTINO, M.D.

ABSTRACT–Patients with uncomplicated pneumothorax who require tube thoracostomy can often be followed without admission to the hospital. We have recently treated twenty-one patients in an outpatient setting with a high rate of success and no complications. The monetary savings are considerable.

The rising cost of medical care and the ongoing nationwide nursing shortage mandate that outpatient treatment be considered whenever patient safety, comfort, and outcome are not thereby compromised. Small pneumothoraces are often observed or aspirated on an outpatient basis. We believe that many patients with uncomplicated pneumothorax who require tube thoracostomy can also be treated without admission to the hospital.

Pneumothorax is generally classified by etiology. *Primary spontaneous pneumothorax* typically occurs in young healthy people without significant underlying lung disease. The primary presenting symptom is chest discomfort rather than dyspnea. Hypoxemia is usually mild or absent, even with appreciable amounts of pulmonary collapse. At least a third of patients present more than 24 hours after the event.[1] The only pathology consists of small subpleural blebs at the apex of the lung or occasionally in the superior segment of the lower lobe. Because there is no diffuse lung disease, the rule is prompt reexpansion after catheter drainage. Death from a unilateral primary spontaneous pneumothorax is rare to the point of being reportable.[2]

Secondary spontaneous pneumothorax, on the other hand, results from a variety of pulmonary diseases, most commonly chronic obstructive lung disease. Other causes include cystic fibrosis, diffuse interstitial lung disease, tuberculosis, carcinoma, and infectious processes. Most patients with secondary pneumothorax present with shortness of breath and often with signs of intrapleural tension even without much lung collapse. Profound hypoxemia is common and is due to diffuse lung compromise because the more normal areas of lung collapse more than the less compliant diseased sections. About a third of the patients require more than one chest catheter to effect reexpansion and overall mortality averages 16%.[3]

Traumatic pneumothorax is often associated with rib fractures, hemothorax, and other injuries. *Catamenial pneumothorax* is an uncommon condition that occurs in young women coincident with their menstrual periods.[4] Several diagnostic and therapeutic procedures can result in *iatrogenic pneumothorax,* including percutaneous and transbronchial lung biopsy, thoracentesis, pleural biopsy, central line placement, and mechanical ventilation. The first two of these are complicated by pneumothorax in 15% and 5% of cases, respectively. Many of these procedures are performed on outpatients with reasonable lung function.

Clinical Experience

During the past two years we have treated 21 cases of pneumothorax with tube thoracostomy in an outpatient setting. Criteria for considering outpatient treatment include the following: 1) Patient preference. Most patients prefer to avoid hospitalization. Some, however, simply do not like the idea of going home with a thoracic catheter in place; 2) Reliability. The surgeon must feel comfortable that the patient will follow the simple necessary instructions and return for scheduled evaluation; 3) Pain must not be severe; 4) The lung must be reexpanded fully; 5) Ongoing air leak must be small or absent; and 6) Hemothorax must be small or absent.

If these criteria are satisfied, a 12 F or occasionally 16 F tube is placed anteriorly or laterally and connected to a Heimlich flutter valve.[5] Simple observation of the valve allows determination of both tube patency and the presence or absence of continuing air leak. Lung reexpansion is confirmed by chest radiography. The patient is seen in the office in two to three days. The tube is removed once there is no air leak or other problem.

Fifteen of the patients had primary spontaneous pneumothorax, 12 first episodes, two second, and one third. Three patients had secondary spontaneous pneumothorax resulting from bullous lung disease, carcinoma, and diffuse interstitial lung disease. Two cases were from percutaneous lung biopsy for pulmonary nodules and one from transbronchial lung biopsy. The average age was 30 with a range of 17 to 88. There were 10

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men and 11 women. The degree of collapse varied between 20% and 100%. Eleven patients had an ongoing air leak at the time of discharge. The catheters were removed in the office two to six days after insertion.

One patient was admitted to the hospital on the day following discharge because of pain. Underwater suction was not necessary, and discharge was possible 24 hours later. A second patient was found to have recollapse of the lung and was admitted for suction. The air leak sealed and the tube was removed four days later. The overall success rate of outpatient treatment was in excess of 90%. There were no complications.

Discussion

The safety and efficacy of outpatient tube thoracostomy for pneumothorax has been documented previously. Mercier and associates[6] in Canada treated 96% of 226 consecutive cases in this manner. Their success rate was 78%. The only complication was a localized infection at the catheter insertion site. Cannon et al[7] reported a series of 41 pneumothoraces of which 83% were treated without hospital admission with an 88% success rate and with no complications.

The cost savings are substantial. A generous estimate of expenses for outpatient treatment, including professional fees, supplies, and four chest radiographs yields a total of $843. The average hospital cost for pneumothorax in patients under 70 years of age in New Haven under DRG or All-Payers systems is $3710, not including professional fees. The savings per episode is thus over $3000. Before the advent of DRGs, Cannon found a fivefold difference between inpatient and outpatient care.[7]

We believe that outpatient tube thoracostomy is applicable to most patients with primary spontaneous pneumothorax, many patients with iatrogenic pneumothorax, especially those caused by needle or transbronchial biopsy, and some carefully selected patients with secondary spontaneous pneumothorax. Hospital admission should be limited to patients with functional compromise, severe pain, hemothorax, large air leak or air leak persisting for over a week, failure of the lung to expand, complications of catheter placement, and patients who are unreliable or unwilling to continue treatment at home.

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Thoracoscopy for Diagnosis of Chest Disease

CYNTHIA POULOS, M.D., RONALD PONN, M.D., MARYANN TRANQUILLI, R.N.,
ALLAN TOOLE, M.D., AND HAROLD STERN, M.D.

ABSTRACT—Diagnostic thoracoscopy was performed on twenty-four patients during a two year period. Valuable diagnostic, therapeutic, and prognostic information could generally be obtained. The procedure provides an alternative to open thoracotomy or empiric treatment without a tissue diagnosis.

Endoscopic examination of the pleural space and its contents was first reported in 1910 by Jacobaeus of Stockholm, who used the technique to effect pneumonolysis for therapeutic pneumothorax in tuberculosis patients.[1] Since then, considerable experience has been gained, mainly in Europe, with thoracoscopy for the diagnosis of both pleural and pulmonary diseases. In 1971 Brandt and associates from Berlin reported 1,130 thoracoscopies for pleural effusion with a high diagnostic yield[2] and have recently published a definitive atlas of the procedure.[3]

During the past two years we have performed thoracoscopy in 24 patients and have been pleased with the results. Our experience forms the basis of this report.

Technique

Although thoracoscopy can be performed under local anesthesia, we consider general anesthesia superior both for patient comfort and to allow better control of ventilation for optimal inspection. A double-lumen endotracheal tube permits unilateral lung collapse for examination of chest wall and mediastinal structures or graded expansion for assessment of visceral pleural and parenchymal abnormalities. Mediastinal motion can be minimized by delivery of small tidal volumes to the ventilated side. The Storz rigid thoracoscope is introduced in a manner similar to chest tube insertion by means of a small intercostal incision. The system consists of a trocar introducer, a fiberoptic telescope, and accessories for irrigation, suction, biopsy, and cautery. The fourth or fifth interspace at the mid-axillary line is usually chosen, but other areas can be used if a specific target is identified by preoperative radiographs. After evacuation of pleural fluid and a systematic inspection of the pleural cavity, appropriate biopsies are taken. A 20F or 24F catheter is passed through the thoracoscopy tract and left in place to drain the hemithorax. Depending on the findings and clinical setting, tetracycline or other sclerosing agents can be instilled into the pleural space to achieve chemical pleurodesis.

Thoracoscopy with a flexible fiberoptic bronchoscope is the preferred approach in some centers. For areas not easily accessible to the rigid instrument we have found the fiberoptic choledochoscope to be superior to the bronchoscope because it has a larger biopsy channel, allows simultaneous irrigation, and is usually available sterile in the operating room.

Indications

Twenty-three of our 24 patients had pleural effusion. Of these, 12 had no prior history of malignancy or known infection. All effusions were exudates. In one patient, pleural fluid was unobtainable. In the remainder, pleural fluid cytology and cultures and pleural needle biopsies were nondiagnostic. Five patients had previously undergone radiation and/or chemotherapy for cancer and were doing well until the appearance of a pleural effusion. Four of these had been treated for lymphoma and one for uterine carcinoma. A third clinical group consisted of four patients with a history of significant asbestos exposure, new effusions, and fluid cytology positive but not diagnostic between adenocarcinoma and mesothelioma, despite electron microscopy of the cells. Two patients had documented lung cancer and small effusions with benign fluid cytology. One patient underwent thoracoscopy for a mass lesion involving the brachial plexus without pleural effusion.

Results

Of the 12 patients with no prior history of cancer, one was shown by thoracoscopy to have tuberculous pleuritis. Three patients were found to have adenocarcinoma consistent with a lung primary tumor. One had a benign asbestos effusion. One had a diffuse malignant pleural mesothelioma. Six patients were found to have nonspecific pleuritis with varying degrees of acute and chronic inflammation and fibrosis. Five of these six cases with benign findings have been followed for over a year with no recurrence and are thus considered true negative. The remaining patient is doing well at three months.

Of the four patients previously treated for lymphoma, one was positive for recurrence and three were negative. One of the latter is a possible false negative result, since intrapulmonary lymphoma was documented seven months later although there was no recurrence of the effusion. A definite false negative occurred in the patient with uterine carcinoma. The examination was technically difficult due

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to morbid obesity and a large subpleural hematoma from prior thoracentesis. Since clinical suspicion remained high, biopsy of a central mass established the diagnosis.

Of the four patients with positive cytology, two were shown to have adenocarcinoma and two mesothelioma. One patient with lung cancer and effusion had documented pleural involvement and was spared resection; the other patient had a negative study and later underwent lobectomy for a Stage I squamous cancer.

The only patient in the series without pleural effusion presented with ulnar neuropathy. Computerized tomographic and magnetic resonance scans showed a diffuse infiltrating lesion surrounding the brachial plexus. A transpleural thoracoscopic biopsy revealed malignant myeloma. The nature of the lesion would have made open or needle biopsy difficult.

There were no complications or deaths from the procedure in any of our patients. Table 1 summarizes the clinical groups and thoracoscopic findings.

Table 1
SUMMARY OF CLINICAL GROUPS AND FINDINGS

Effusion, negative history — 12 patients	
adenocarcinoma	3
mesothelioma	1
benign asbestos effusion	1
tuberculous pleuritis	1
nonspecific pleuritis	6
Effusion, treated malignancy — 5 patients	
recurrence	1
true negative	2
false negative	1
? false negative	1
Effusion, adenocarcinoma vs. mesothelioma —4 patients	
adenocarcinoma	2
mesothelioma	2
Effusion, lung cancer — 2 patients	
pleura involved	1
pleura free	1
Mass, no effusion — 1 patient	
malignant myeloma	

Comment

The reported accuracy of thoracoscopy in patients with pleural effusion ranges between 88% and 98%.[4-7] Complications have been few and have included empyema, bleeding, pneumothorax, and tumor seeding of the endoscopic tract. No deaths have been reported as a direct result of the procedure. Our experience confirms the safety and accuracy of thoracoscopy. The single definite false negative study was due to technical factors and did not delay rapid subsequent diagnosis by other means. The patient with recurrent pulmonary lymphoma listed as a possible false negative result does not appear to have pleural involvement at all.

Thoracoscopy should be considered in patients with persistent or recurrent exudative pleural effusions that remain undiagnosed after noninvasive studies, thoracentesis, and percutaneous pleural biopsy. The procedure offers an attractive alternative to continued observation or empiric therapy on the one hand and open thoracotomy on the other. Although therapy and eventual outcome may not be changed in many patients with malignant effusion a relaible negative study can certainly be of profound psychological and practical benefit to the many patients with nonmalignant processes.

Valuable therapeutic information can be gained in patients who are candidates for aggressive treatment of mesothelioma both by establishing a tissue diagnosis and by assessing the location and extent of involvement. The inability to distinguish adenocarcinoma and mesothelioma by cytology alone is a common problem. In patients with pleural effusion and significant asbestos exposure, thoracoscopy provides a means of differentiating malignant disease from the entity termed benign asbestos effusion.[8] Pleural effusion is noted at the time of presentation in 5% to 10% of patients with lung cancer.[9] Direct pleural examination in such patients can identify those in whom the effusion is due to obstructive pneumonitis rather than pleural seeding and who are thus candidates for curative resection. One of our patients with lung cancer and exudative fluid had a stage I tumor resected later, whereas the other was spared resection because of a positive study.

Thoracoscopy has also been shown to be effective in diagnosing acute and chronic pulmonary infiltrates and may find wider application with the increasing number of immunocompromised patients.[10,11] Less experience has been reported in the setting of mass lesions, but the chest wall, mediastinum, diaphragm, hilum, pericardium, and thoracic inlet are all potentially accessible. Therapeutic applications include foreign body extraction, debridement of empyema cavities, evacuation of clotted hemothorax, control of hemorrhage, sympathectomy, and chemical pleurodesis.[12]

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Critical Care Helicopter Service

Evaluation of Prehospital Utilization in Trauma Care

ROBERT J. SCHWARTZ, M.D., M.P.H. AND LENWORTH M. JACOBS, M.D., M.P.H.

ABSTRACT–The purpose of this paper is to evaluate the ability of prehospital trauma care providers to assess the need for air ambulance after examination of the crash site and the injured patient.

A prospective cohort study was done of patients injured in motor vehicle or motorcycle crashes and transported to Hartford Hospital. All patients, from June 1985 through October 1986, transported from the scene of the crash to Hartford Hospital and subsequently admitted to the hospital were entered into the study. One hundred seventeen patients were transported by critical care helicopter and 288 patients were transported by ground ambulance. The helicopter-transported patients were more physiologically deranged ($p < .001$), anatomically injured ($p < .001$) and had a decreased probability of survival ($p < .001$) than the ground ambulance group. Prehospital care providers can discriminate between patients injured in motor vehicle crashes who require transport by helicopter to a trauma center and those who do not. Helicopter patients have a significantly improved survival when compared to ground transported patients. Trauma patients transported to the Hartford Hospital Trauma Center have higher survival rates than expected.

Introduction

The purpose of this paper is to evaluate the ability of prehospital trauma care providers to assess the need for air ambulance transport of patients injured in motor vehicle or motorcycle crashes. The research hypothesis is that prehospital trauma care providers in the State of Connecticut can identify patients that are more physiologically deranged, more anatomically injured, and have a decreased probability of survival and who, therefore, require transport to a trauma center by critical care helicopter. In addition, patients transported by helicopter should have better survival than severity-matched patients transported by ground ambulances.

Injury is caused by an interchange of energy from a source to the human body. Mechanical, electrical, thermal, radiation, chemical, and magnetic energy are examples. In Connecticut, transfer of mechanical energy by motor vehicles is the leading cause of death and disability from injury, accounting for 430 deaths from 104,503 reported collisions in 1983.[1]

Obviously, not all motor vehicle collisions involve serious injuries or culminate in death. In fact only 5% of all injuries from motor vehicle collisions require advanced level trauma care.[2-5] The charge to the trained personnel who respond to collisions is to determine the level of care necessary. In Connecticut, these personnel are the municipal and state police, firemen, and the emergency medical technicians (EMTs) who staff volunteer and commercial ambulance services. The system within which they collectively work is termed the Emergency Medical Services (EMS) system, which is regulated by the Office of Emergency Medical Services (OEMS), a division of the State Department of Health. Although regulations are developed at the state level, the delivery of emergency medical services is delegated to the local municipalities. Therefore, each community and township (169 in Connecticut) is responsible for EMS to its community.

All regions of the State of Connecticut must have a basic life support (BLS) ambulance service available at any time. This is accomplished by volunteer, municipal, and commercial ambulance services. Some communities have a combination of two such services.

When an emergency occurs, such as an automobile collision, a bystander usually calls for police or for an ambulance. This call activates the EMS system. The police and initial ambulance are called first responders; as their name implies, they respond each and every time an emergency is identified by a bystander. The first responders with the ambulances are BLS trained.

They assess the emergency and initiate the second tier of the EMS system. This second tier, the advanced life support (ALS) providers, are, of course, the second responders because of their order of arrival at the scene.

LIFE STAR is a critical care helicopter that is licensed as an ambulance in the State of Connecticut. The flight crew consists of: 1) an emergency-medicine physician

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functioning as medical control; 2) a flight nurse who has had at least three years of critical care nursing and has been certified as an EMT-paramedic; and 3) a flight respiratory therapist trained in airway management and certified as an EMT, with ALS skills. The flight crew is a highly trained, skillful unit that brings the trauma center to the injured. The Connecticut critical care helicopter program was designed to be second responders at motor vehicle crashes.[6]

In Connecticut, the prehospital system has not been organized into a trauma care system that utilizes the methods of triage to match the patient to the appropriate hospital in the shortest period of time. A system that utilizes triage improves care and saves lives.[7-20]

Prior to June 1985, ambulance services would transport an injured patient to the closest emergency department, regardless of resources available and severity of injury. In June 1985, LIFE STAR initiated service to the State of Connecticut. This program allows prehospital care providers an element of triage for their patients. The triage decision to be made is whether to request the assistance of a critical care helicopter or to transfer to the closest facility. This decision should be made based on information obtained at the crash site and from the physical examination of the patient.

The central issue in determining utilization is the appropriate selection of patients by injury scene personnel. This research question has serious ramifications. A system which overtriages, that is, that sends patients by helicopter who did not need this service, creates a costly overuse of helicopters and trauma centers, in addition to funneling patients away from community hospitals. Undertriage, or sending patients to community hospitals with unrecognized serious injuries, constitutes a medical problem and can cost lives.[7]

Triage guidelines for use of the critical care helicopter in the State of Connecticut were developed by a committee at the Hartford Hospital in 1984.[21] The guidelines were modeled after the recommendations of the Conference on Injury Severity Scoring and Triage.[22] This conference was attended by military and civilian experts on triage and trauma care; they reviewed the world literature and published the guidelines that were extracted from the literature. The critical care helicopter triage guidelines were approved by OEMS, and by a state oversight committee that had been appointed to review the program. These guidelines were made available to prehospital care providers through pamphlets, lectures, and demonstrations.

Methodology

All patients transported from the scene of a motor vehicle collision directly to Hartford Hospital during the time period 17 June 1987 through 30 October 1986 by critical care helicopter were entered into this study; patients transferred from other hospitals were excluded. The data were prospectively entered into a computerized registry.

Variables collected were: 1) patient identifier, 2) time of day, 3) date, 4) age, and 5) survival. Physiologic measurements recorded at the scene of the collision were recorded and utilized to calculate a measurement called the Trauma Score. The physiologic variables include: 1) blood pressure, 2) capillary refill, 3) respiratory rate per minute, 4) respiratory effort, 5) best verbal response, 6) best motor response, and 7) the ability to open eyes.

The Trauma Score is a numerical scale from 1 to 16 that is calculated from physiologic parameters.[23-25] A score of '1' indicates maximum physiologic derangement and a score of '16' indicates minimal physiologic derangement. As the Trauma Score drops below 12, the survival rates sharply decrease.[23]

Anatomic injuries diagnosed during the hospitalization or at autopsy also were recorded. They were utilized to calculate the Injury Severity Score (ISS).[26,27] The ISS is a numerical scale from 1 to 75 calculated from scoring the anatomic injuries as described by Baker.[26,27] A score of '1' signifies minimal injury and a score of '75' signifies maximal anatomic injury.

TRISS

The probability of survival for each patient was calculated, utilizing the Trauma Score, the ISS, and the patient's age. This is the TRISS computation utilized by the Major Trauma Outcome Study.[28,29]

The probability of survival can be calculated utilizing the following equation:[30]

$$P_s = 1/(1 + e^{-b})$$

where:

P_s=probability of survival,
e=natural logarithm and,
$b = b_0 + b_1\ (\mathrm{TS}) + b_2\ (\mathrm{ISS}) + b_3\ (\mathrm{age})$.

$b_0 - b_3$ are weighted constants derived from the national data base.[28] Age is coded as zero for ages 0-54 and one for age 55 or older.

Analysis

Homogeneity between the helicopter- and ground-transported patients was evaluated by comparing the characteristics of the age and gender distributions between the two groups.

The research hypothesis that prehospital care personnel can identify patients appropriate for treatment by a critical care helicopter crew was evaluated by comparing the distribution of the trauma score, injury severity score, and probability of survival between groups and was tested using the Student's *t*-test.

An evaluation of the accuracy of the prehospital care providers to triage trauma patients to a trauma center utilizing a critical care helicopter was performed. An appropriate triage is defined as a patient who fulfilled either of two requirements:

1. A Trauma Score, at the scene, of 12 or less or
2. An Injury Severity Score of 16 or greater.

These criteria were chosen because they correspond to patients who have a 10% or greater probability of dying.[24,27]

Patients who met neither of these requirements were defined as overtriaged. The undertriage rate, defined as patients who fulfilled one of the two criteria but were transported to a local hospital could not be measured. Access to the necessary data from other hospitals was not available.

The actual survival can be compared to the expected survival utilizing the characteristics of the Z distribution with the following equation:[29]

$$\frac{\sum_{i=1}^{n} O - \sum_{i=1}^{n} P_s}{\sqrt{\sum_{i=1}^{n} (P_s)\,(1-P_s)}}$$

where:

O = total number of patients actually surviving, and

P_s = probability of survival.

The resultant score, termed Z score, measures the deviation from the mean. The mean of the population is obtained utilizing the national data base to estimate the true mean. A Z score of zero is interpreted as an actual survival in the study group that is the same as the mean survival of the national population. A positive score indicates that the actual survival is better than the mean and a negative score indicates the actual survival is less than the mean. A score of 1.96 or greater or −1.96 or less is significant at an alpha level of .05.

The difference between the Z scores of the ground cohort from the helicopter cohort measures the contribution of the critical care helicopter crew to the survival of comparable trauma patients relative to ground transported patients when transported from the scene to the trauma center.

Results

Intervention Group

One hundred eighteen patients were treated by the helicopter team from the scene of a crash directly to the Hartford Hospital Trauma Center during the study dates (Table 1). Eighty-nine (77%) were male and 29 (33%) were female. The mean age was 28.26 with a range from eight to 86 years. The mean trauma score of the air transported patients was 10.40 with a range of one to 16. The median trauma score was 12. The mean ISS was 36.82 with a range from eight to 75. The median ISS was 34. Using the TRISS methodology, the mean probability of survival for the cases was .63 with a range from .001 to .999. The median probability of survival was .82 (Table 1).

Comparison Group

Two hundred eighty-eight trauma patients were transported to the Hartford Hospital Trauma Center by ground ambulance directly from the scene of the motor vehicle crash. Two hundred ten (73%) were male and 78 (27%) were female.

Table 1

DEMOGRAPHIC CHARACTERISTICS OF HELICOPTER TRANSPORTED PATIENTS

	Number	*Mean*	*Median*	*Range*
SEX				
Male	89 (77%)			
Female	29 (23%)			
AGE	118	28.26	22	8-86
TRAUMA SCORE	118	10.40	12	1-16
INJURY SEVERITY SCORE	118	36.82	34	8-75
PROBABILITY OF SURVIVAL	118	.63	.82	.001-.999

The mean age was 30.87 with a range from infancy to 91 years. The median age was 26. The mean trauma score of the ground transported cohort was 14.23 with a range from one to 16 and a median trauma score of 16. The mean ISS was 19.69 with a range from one to 75 and a median of 17. The mean probability of survival was 0.90 with a range from 0.001 to .999 and a median of .99 (Table 2). The results of the analysis between cohorts for sex, age, trauma score, ISS, and probability of survival utilizing the student *t*-test are shown in Table 3. There are highly significant differences between the helicopter transported cases and ground transported cases in Trauma Score, ISS, and probability of survival.

Table 2

DEMOGRAPHIC CHARACTERISTICS OF GROUND PATIENTS

	Number	*Mean*	*Median*	*Range*
SEX				
Male	210 (73%)			
Female	78 (27%)			
AGE	288	30.87	26	< 1-91
TRAUMA SCORE	288	14.23	16	1-16
INJURY SEVERITY SCORE	288	19.69	17	1-75
PROBABILITY OF SURVIVAL	288	0.90	.99	.001-.999

Overtriage

One hundred thirteen patients (95.7%) were accurately triaged to be transported by a critical care helicopter to a trauma center. Only five patients (4.3%) were overtriaged. The undertriage rate could not be measured. These five cases were further evaluated to identify factors that may be helpful to identify correctly the overtriage patient in the future.

All five patients had evidence of a large energy transfer to the vehicle and a head injury on physical examination. Of the 113 patients appropriately triaged, 93 (82%) had the same triage indications.

Calculation of the Z score, or the deviation of the difference in survival from the population mean, was calculated to be 1.93 for the ground transported patients. This approaches a statistically significant (1.96) improvement above the expected survival. The Z score calculated for the air transported patients was 4.19, a statistically significant improvement in survival over the expected survival. Comparison between the ground transported group and the helicopter transported group reveals that the helicopter patients have an actual survival 2.23 SE higher than for the ground patients.

Table 3
ANALYSIS OF DATA: HELICOPTER vs GROUND

Study Group	*Number*	*Mean Value*	*p-VALUE (t-test)*
SEX (% Male)			
HELICOPTER	118	77	.437
GROUND	288	73	
AGE			
HELICOPTER	118	28.26	.181
GROUND	288	30.87	
TRAUMA SCORE			
HELICOPTER	118	10.40	.0001
GROUND	288	14.23	
INJURY SEVERITY SCORE			
HELICOPTER	118	36.82	.0001
GROUND	288	19.69	
PROBABILITY OF SURVIVAL			
HELICOPTER	118	0.63	.0001
GROUND	288	0.90	

Discussion

The LIFE STAR critical care helicopter program has been designed to work within the present Emergency Medical Services System in the State of Connecticut. The helicopter program is licensed as an ambulance, and the medical crew consists of a physician, flight nurse, and respiratory therapist. The equipment on board the helicopter is equivalent to the equipment found in trauma center resuscitation suites and intensive care units, but is modified for weight and portability to adapt to the special mobile environment. Thus, the critical care helicopter is the most advanced level of care to injury victims in the field presently available in the State of Connecticut.

The research hypothesis that prehospital trauma care providers can identify patients requiring treatment and transport by helicopter was evaluated. This study compares two cohorts of trauma patients injured in motor vehicle crashes, those transported and treated by the helicopter crew and those patients transported by ground ambulance to the Hartford Hospital Trauma Center.

Homogeneity between the two groups was tested utilizing age and gender; these were not statistically different. The criteria used to determine triage accuracy were: 1) the amount of physiologic derangement measured at the scene and quantified using the trauma score, 2) the anatomic injuries diagnosed and quantified using the Injury Severity Score, and 3) the calculated probability of survival.

The helicopter-transported cohort was statistically more physiologically deranged, had more severe injuries, and had a poorer prognosis for survival when compared to the cohort transported by ground to a trauma center during the same time period.

In a trauma care system, the field personnel must be able to assess the trauma patient at the scene and make a decision that matches the severity of the patient with the level of care necessary. This is termed triage. In Connecticut, the trauma care system is developing; consequently at present, triage is accomplished by utilizing the critical care helicopter program at the scene of the injury. The results of this study support the hypothesis that first responders at the scene can identify patients who are more severely injured and more likely to die, and can triage those patients to be transported by the critical care helicopter.

This conclusion is consistent with the expectations based on the experience of air ambulances in the United States and around the world. The importance of this finding can be realized in the proper utilization of resources. A helicopter is an expensive mode of patient transport and is staffed with skilled and educated providers of health care. Since 95% of trauma patients will not require the level of care provided by a critical care helicopter, the air transport of these patients would be financially costly to the patient, to the state, and to the population as a whole. In addition, the critical care services would not be available to others in need of them; thus, avoiding overtriage is critical.

This paper demonstrates that prehospital trauma care providers are not likely to overtriage patients. An individual review of those five overtriaged cases demonstrates that all had evidence of large energy transfer to the vehicles, all had head injuries, and two were transported with another patient from the same collision who was appropriately triaged.

The overtriaged patients share the two indications with 73% of the appropriately triaged group. With the methods available for triage, contemporary trauma care systems must tolerate some overtriage because there will be cases that will be difficult to assess at the site of injury. The American College of Surgeons Committee on Trauma estimates the overtriage rate to be 30-40% in a mature trauma care system.[7]

For the ground transported patients, the retrospective design for determining accuracy of triage was not suitable because scene information and transport times were not consistently available. There are two decisions that should be made in triage. First "Is the patient severely enough injured to require a trauma center?" and second, "What mode of transport, helicopter or ground, should be used?" These decisions require knowledge of the location of the accident, the length of time of extrication, and the driving time to the trauma center. The analysis comparing the actual survival rates to the expected survival rates of the national trauma population reveals that trauma patients transported to Hartford Hospital have a better than expected survival rate. The critical care helicopter transported patients have a highly significant improvement in survival over that expected from national data. The ground transported patients approach statistical improvement above expected. Both patient groups have been transported to the same trauma center from the scene of a motor vehicle collision, therefore, the only difference in their care is the prehospital care and transport. Since the helicopter cohort had a survival 2.23 SE better than the ground transported cohort, the improved survival can be attributed to the critical care helicopter program.

Recommendations

Further evaluation is necessary in Connecticut to identify the strengths and weaknesses of trauma care. In the years ahead, a trauma care system will develop. The process may be politically driven, that is, legislation identifying trauma centers and regulating the triage of patients to these centers, or the process will be medically driven. Centers that have shown expertise in trauma through evaluation will naturally become the trauma centers.

There are three components of triage necessary for the development of a triage system. Initially, first responders must have the capability to identify severely injured patients who have the higher risk of dying. Second, trauma centers must be identified as the destination for these patients. This may require bypassing nontrauma center emergency departments. Third, the first responders will need to make the decision determining how the patient will be transported to the trauma center, by air or by ground. This is a complex decision involving knowledge of the personnel capabilities of the ground services available in their region compared to the capabilities of the helicopter crew. It involves estimating the transport time. This is dependent on distance, weather, traffic conditions, the time of day, and access to the patient.

All components and subcomponents require evaluation if the trauma care system is to function well and for the good of the patient. In Connecticut, we do not have a mature trauma care system. There are no trauma centers recognized by emergency medical services nor designated by government. The recognition or designation of trauma centers in Connecticut is the next logical step. The literature shows us that the utilization of trauma centers decreases mortality of trauma patients. Therefore, at the present time, we must measure accurately trauma mortality; this measurement should be repeated after the designation of trauma centers.

The State of Connecticut should develop a trauma reporting system that registers all patients admitted to Connecticut hospitals for the treatment of injuries. The organization of the data base should include the categories of prehospital, emergency department, acute hospitalization, and rehabilitation.

The elements of time, location, level, type of care, and triage decision would be included in the prehospital phase. In addition, the ambulance run form should include a statement explaining why a critical care helicopter was or was not utilized. In the emergency department, the results of diagnostic and therapeutic interventions would be recorded. The acute hospitalization period would include the length of stay, operations and procedures, complications, and mortality rates. The rehabilitation phase would include the services provided, the length of time, and the best level of recovery that the patient achieves.

Once this reporting system is developed, the undertriage rates can be determined. These patients would be identified as having needed a trauma center but not being triaged to a trauma center. Their outcomes can be compared to the outcomes of accurately triaged patients and overtriaged patients, both by ground ambulance and by critical care helicopter. It is these comparisons that will provide the information necessary to implement improvement of trauma care for the entire population.

Optimally, these data should be obtained prior to the development of a trauma care system so the impact of the trauma center designation can be measured.

In conclusion, this study has supported the hypothesis that prehospital trauma care providers can appropriately utilize the critical care helicopter with a minimal amount of overtriage. It identifies as the next logical evaluation the measurement of undertriage in the present system in Connecticut. Undertriage is a more severe problem than overtriage because it involves patients lives and well-being rather than finances. If a statewide trauma registry were initiated before the identification process of trauma centers, then the impact of trauma centers could be measured.

The critical care helicopter program for Connecticut is treating and transporting patients who are appropriately matched to the level of care provided by triage. They have greater survival rate than the ground transported patients. We must now look closely at other elements as well as the total system to determine where improvement in patient care and utilization of resources can best be realized so that all patients can be given an equal opportunity for surviving trauma in Connecticut.

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Male Abortion Counseling

Prevention of Repeat Abortions Through Male Counseling

ALLEN G. PITTS, M.DIV., CAC

ABSTRACT—Beginning in January 1986, Planned Parenthood of Connecticut has provided counseling for the male partners of abortion patients at their West Hartford site. Over 400 men have been seen in individual sessions to date. It appears that these sessions may have a significant effect on the rates of repeated abortions in the couples seen. While our records are incomplete, there are indications that the counseling of male abortion partners may in fact contribute to a significant decrease in the number of repeated abortions.

It is estimated that over 600,000 male partners of abortion patients sit in abortion clinic waiting rooms each year. Professor Arnold Shostak of Drexel University in Philadelphia surveyed 1,000 of these men from 18 states. In 1984 he reported in his book, "Men and Abortions: Lessons, Losses and Love," that 60% of the men stated that they had not used contraceptives. Further, that although 93% of the men stated that they would do all they could to prevent future abortions, 30% were repeaters.

In January 1986, Planned Parenthood of Connecticut began a program to offer counseling to male partners of abortion patients in their West Hartford location. The program was based on the belief that "male partners of abortion patients can be helped to be successful contraceptors and to become more enlightened and responsible in their reproductive health and sexual behavior." As of mid-December 1987 over 400 persons have been seen in one-to-one meetings with the male counselors.

Statistics recorded from these meetings indicate that 20% of the men had previously been involved in an abortion event with a sexual partner. Their relationships were: 15% married, 5% formally engaged, 13% living together, and 67% were single. The average length of the relationships was eight months. Ages of the male partners: 12% were 16-17 years old, 19% were 18-20 years old, 32% were 21-25 years old, 20% were 26-30 years old, 13% were 31-40 years old. Only five of the men were over 40 years of age. One was less than 16 years old.

Initially attempts were made to form discussion groups in the waiting room, but this proved to be ineffective. When the methodology was changed to offering the men individual counseling sessions the reaction was most positive, and 93-95% of the men readily accepted the opportunity of private sessions with a trained male counselor.

The areas of concern which the men raised were: 81%, support; 59%, birth control; 34%, relational; 13%, sexually transmitted diseases (STD) and AIDS.

Support

The overwhelming choice of topics the men themselves raised in these sessions was post-abortion support measures they could provide for their partners. Their questions included requests for guidelines on how to provide both medical and emotional care.

Birth Control

The second topic raised was a request for birth control information and education. There was often a tone of discomfort on the topic of birth control. The men wanted information with no hint of a direct relationship to them as individuals or to their personal sexual history. Much of this appeared to be due to guilt feelings about the pregnancy and their lack of knowledge about birth control or failure to use it in spite of a relatively high level of education for the group as a whole. Many men made open statements about their guilt feelings and "having to put her through this."

Relational

The third major area of concern was relational issues between themselves and their partner.

STD and AIDS

While the issue of STDs was raised by the men in only 13% of the sessions, the majority of these cases occurred in the very end of 1987 and almost exclusively were requests by the men for information about AIDS. We believe this heightened interest in AIDS may have been in part a result of an increase in AIDS awareness literature introduced to the waiting room at that time.

No records are available relating to the number of abortion patients who arrived at the Planned Parenthood site with their partners prior to the male counseling program, but in 1986-87 approximately 40% of the patients came

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with their male partners. We believe this is an increase and comments have been made by both the patients and the partners that they came to this location specifically because male counseling was available. In addition, Planned Parenthood has made significant efforts to provide a setting in which men may feel comfortable and to correct misconceptions that it is primarily "a woman's place."

The measure of success of such a program is whether the encounter has provided a needed service to aid the men; for this, we have no way to measure directly. The benefit of a male counselor in this situation is not to motivate change, but to aid motivation that is already present by providing information to the client. In the two years the program has been active, only two men were seen a second time by the counselors in a repeat abortion experience. However it is possible that only the female partners came with the second unwanted pregnancy. In addition, only 75% of the abortion clinic evenings were covered by the male counselor in 1986, and there are obviously other sites providing abortion services. However, this <1% known repeater rate could be a significant decrease from the 20-30% repeat rate reported by Professor Shostak and others, and is worthy of further investigation.

Surveying Satisfaction: What Patients Think

Many surveys have been done to find out what patients think of their physicians, since patient satisfaction gives rise to such benefits as more referrals and fewer malpractice suits. These polls find fairly consistent results. Two done by the American Medical Association (AMA) are indicative of what patients think and what they want.

CHOOSING AND USING

The Council on Long-Range Planning and Development asked a group of patients what they considered important in choosing a physician. At the top of the list were:

- the physician's scientific knowledge (97%);
- the amount of time the physician spends with them (93%); and
- recommendations from friends (89%).

The same patients, when asked what they considered important in deciding to stick with a physician, cited:

- the physician's scientific knowledge (96%);
- the length of time needed to get an appointment (92%);
- their personal relationship with the doctor and personal treatment by the office staff (85%); and
- the length of time spent waiting in the reception room (83%).

Other factors include convenient location, affordable services and pleasant practice environment.

WHAT THE PUBLIC THINKS

The AMA annually surveys physicians and the public regarding a number of health care issues. Survey participants since 1982 have been asked to agree or disagree with statements about doctors, yielding the following information:

	% Agree				
	1982	1983	1984	1985	1986
Doctors usually explain things well to their patients	55%	49%	44%	50%	44%
Doctors don't care about people as much as they used to	**	**	54	56	49
Most physicians are actively involved in local community activities	**	**	**	49	37
Doctors' fees are usually reasonable	42	32	27	32	36
Most doctors discuss fees with their patients before treatment	**	**	**	34	32
People are beginning to lose faith in doctors	62	66	68	64	64

**Question not asked

— *The Internist, Health Policy in Practice,* March 1988.

Important Advances in Clinical Medicine

Preventive Medicine and Public Health

The Scientific Board of the California Medical Association presents the following inventory of items of progress in preventive medicine and public health. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in preventive medicine and public health that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Preventive Medicine and Public Health of the California Medical Association and the summaries were prepared under its direction.

Cholesterol Reduction—Pros and Cons

More than 5 million Americans have symptomatic coronary artery disease, and, though age-adjusted mortality due to this condition has declined steadily since the 1960s, it remains the leading cause of death in the United States. Thus, clinicians' efforts to prevent the onset or progression of coronary disease can provide major benefits.

Controversy has existed regarding the importance of elevated cholesterol as a risk factor and the impact of reduction efforts. Recent studies, however, have confirmed the significance of the risk and shown the benefits produced by reducing elevated levels.

In October 1987, the National Heart, Lung, and Blood Institute recommended that baseline cholesterol levels be determined for all persons aged 20 years or older. Persons with values below 200 mg per dl should be retested every five years. Those with confirmed values of 200 to 239 mg per dl who do not have other risk factors or evidence of coronary artery disease should be placed on a low-fat diet and retested annually. Risk factors to be considered, in addition to the major ones of smoking and hypertension, are male sex, diabetes mellitus, cerebrovascular or peripheral vascular disease, weight greater than 30% above standard, high-density lipoprotein cholesterol (HDL-C) levels of less than 35 mg per dl, and a family history of premature coronary artery disease. Those in the 200 to 239 mg per dl range with evidence of heart disease or two or more risk factors and those with confirmed values above 239 mg per dl should have a lipoprotein analysis. If analysis reveals low-density-lipoprotein cholesterol levels of 130 mg per dl or greater, specific diet therapy and follow-up are recommended. Details of this program have recently been published in the *Archives of Internal Medicine*.

Given the most recent information available, it appears that all major modifiable risk factors, including elevated cholesterol levels, should be addressed. Patients with confirmed total cholesterol levels above the 200 to 220 mg per dl level or low HDL-C levels (less than 35 to 40 mg per dl) are candidates for therapy to prevent premature coronary artery disease. Higher cholesterol levels, or the presence of multiple risk factors, increase the urgency for intervention. Diet, weight control, and exercise may be sufficient to lower cholesterol levels while simultaneously increasing HDL-C levels. If these efforts fail, however, drug therapy should be considered.

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Penicillinase-Producing *Neisseria gonorrhoeae*

Penicillinase-producing *Neisseria gonorrhoeae* (PPNG) organisms were first isolated in 1976, although gradually

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increasing resistance on a chromosomal basis was noted 30 years before, shortly after the introduction of penicillin treatment for gonorrhea. For the past ten years, worldwide surveillance of resistance patterns has caused alarm, as both plasmid-induced (PPNG) and chromosomally mediated resistance in *N gonorrhoeae* have appeared and crossed borders from one country to another.

In 1986, PPNG was reported to infect 16,600 patients in the United States, representing only 1.8% of all *N gonorrhoeae* infections. Chromosomally mediated resistance to antibiotics other than penicillin remains a smaller proportion still. Although these numbers are small, there is concern that outbreaks would be difficult to control, and worldwide experience lends credence to that fear. In the Far East, PPNG accounts for as much as 50% of all organisms isolated and, as a consequence, spectinomycin was adopted by the US military as the drug of choice for treating gonorrhea.

Susceptibility testing by the Centers for Disease Control of *N gonorrhoeae* organisms from around the US has shown resistance to spectinomycin, tetracycline, trimethoprim-sulfamethoxazole, cefoxitin, and erythromycin.

Epidemics of PPNG or other antibiotic-resistant organisms tend to appear in hyperendemic areas, such as New York City and Los Angeles. Outbreaks have occurred elsewhere, however, in both homosexual and heterosexual groups.

There is evidence that some antibiotic resistance patterns develop because of antibiotic use, but they may also be plasmid related. Several laboratories are doing susceptibility testing of *N gonorrhoeae* routinely. Physicians treating gonorrhea must maintain a high level of suspicion and concern about treatment failures and think of resistance of the gonococcus rather than poor compliance as a cause.

Physicians should maintain an awareness of local resistance patterns and question their patients about both domestic and international travel. The days of a shot of penicillin and a pat on the back to treat gonorrhea are clearly over, and vigilance on the part of the physicians may help prevent epidemics of resistant organisms in the United States.

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Preventing Transmission of Human Immunodeficiency Virus Infection

In June 1986, the US Public Health Service held a workshop on the acquired immunodeficiency syndrome (AIDS) at Coolfront, Berkeley Springs, West Virginia, in which the course of the AIDS epidemic was projected through 1991. Some of the most important estimates were as follows:

- By the end of 1991, there will have been a cumulative total of more than 270,000 cases of AIDS in the United States (up from more than 38,000 as of July 1986), with more than 74,000 cases occurring in 1991 alone.
- By the end of 1991, there will have been a cumulative total of more than 179,000 deaths from AIDS in the US, with 54,000 of these occurring in 1991 alone.
- The vast majority of AIDS cases will continue to come from the currently recognized high-risk groups, including homosexual men and intravenous-drug users.
- New AIDS cases in men and women acquired through heterosexual intercourse will increase from 1,000 in 1986 to almomst 7,000 in 1991.

Although one drug, zidovudine, has resulted in several months' prolongation of life and fewer opportunistic infections in AIDS patients, there is no satisfactory treatment for the causative agent of AIDS, the human immunodeficiency virus (HIV). Prospects for an effective vaccine against HIV are not promising for at least five years and possibly until the turn of the century. Therefore, for the foreseeable future, the most effective way of reducing the spread of HIV infection is through educating the public about the transmission of HIV, especially those persons at a higher risk for AIDS. Physicians have an important role and responsibility to play in this educational campaign in their daily interactions with patients.

The educational message must be direct rather than vague. "Always use a condom with a spermicidal lubricant from the start of sexual intercourse until the finish" is preferable to "Avoid bodily secretions." Educators, including physicians, must be prepared to use the vernacular and to take into account cultural traditions and practices of diverse groups, including ethnic minorities and homosexual men. Preventing AIDS among intravenous-drug users may be challenging because of the distrust of authority in this population, and their sexual partners may be difficult to reach because the partners do not necessarily have contact with drug treatment centers. Nevertheless, drug users should be encouraged to use methadone and other treatment programs.

The voluntary, confidential use of the HIV antibody test should be encouraged for those who may be at risk for infection, both to identify persons in low-risk groups for education in preventing further transmission, and to serve as a starting point in identifying persons who may benefit from treatment as effective antiviral and immunomodulating agents become available. Patients should be counseled adequately about the implications of a confirmed positive HIV antibody test both before and after the test and should be assured of strict confidentiality. The final decision about whether to take the HIV antibody test should be made by the patient.

As HIV infection becomes more prevalent, the risk that health care workers will be exposed to blood from infected patients also increases, especially when blood precautions are not followed. The Centers for Disease Control have issued guidelines for preventing HIV transmission in health care settings. These guidelines emphasize the need for health care workers to treat blood and body fluids from *all* patients as potentially infected with HIV and to adhere rigorously to infection control precautions for minimizing the risk of exposure to blood and body fluids of all patients.

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Preventing Influenza in Older Adults

The US Public Health Service's Advisory Committee on Immunization Practices recommends annual influenza immunization for persons aged 65 years and older and for other high-risk groups. Until recently, the recommendation was based primarily on extrapolated efficacy data from younger populations, rather than on direct studies in older age groups. Recent research not only confirms the efficacy of flu shots in older age groups, but suggests that the benefits of immunization may be greater than generally appreciated.

From data from the National Hospital Discharge Survey, it has been calculated that persons age 65+ have 370 per 100,000 excess hospital admissions during an influenza epidemic. This rate is more than ten times that of younger adults. The national cost of these excess hospitalizations was estimated at $185 million. Yet, in a study of noninstitutionalized older adults in a large health maintenance organization, flu shots prevented 72% of influenza- and pneumonia-related hospital admissions during epidemic years.

In older adults in long-term-care facilities, vaccine efficacy is less (about 30%) due to age- and disease-related impairments in immune function. But flu shots are considerably more effective at preventing the complications of influenza. Studies of a large series in long-term-care facilities report vaccine efficacies of 47% to 95% in preventing hospital admission, pneumonia, and death.

Present national vaccination rates of 20% are far below the national goal of 80%. Vaccination reminders mailed in the fall to high-risk persons have been shown in several settings to increase vaccination rates to 45% to 60% in the first year of mailing. Vaccination rates of 60% to 70% appear possible with yearly, repetitive reminders. Health care providers should strongly consider mailing flu-shot reminders to their high-risk patients when flu shots become available each fall.

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Smoking Control—Policy and Legal Methods

As a consensus has emerged that exposure to secondhand smoke is harmful, many smoking control advocates have shifted their attention from encouraging smokers to quit to restricting smoking in workplaces and public places. The rationale underlying this shift is the belief that smoking restrictions will not only protect the health of nonsmokers but also will encourage smokers to cut down or quit. This latter outcome could result from both a subtle increase in the social pressure against smoking and a limiting of the time available to smoke. There is evidence that smoking restrictions do encourage smokers to quit smoking. When Pacific Northwest Bell banned smoking in the workplace, enrollment in smoking cessation programs went from 13 to 174 employees per month.

The tobacco industry views the nonsmokers' rights movement as a major threat, and it has waged an aggressive campaign against the enactment of smoking restrictions. This tactic achieved some initial success as the tobacco industry used multimillion dollar advertising campaigns to defeat small, independent nonsmokers' rights groups in Florida and California. However, as the nonsmokers' rights groups shifted their attention from statewide campaigns, in which large advertising budgets are critical, to city and country campaigns, in which grass-roots support is critical, the tobacco industry suffered a series of defeats. The attention from and the success of local smoking restrictions in turn led to the enactment of state restrictions. Currently 10 states and more than 260 cities and counties have enacted laws restricting smoking in public places.

Experience with smoking restriction in both workplaces and communities shows that they are generally easy to implement and enforce. When Pacific Northwest Bell banned smoking, there were no lawsuits because of the ban, the unions supported the ban, and none of the 15,000 employees quit work because of the ban. In San Francisco, the ordinance against smoking in the workplace, which is one of the oldest and toughest, has not caused any lawsuits, and no employer has been fined for noncompliance.

The nonsmokers' rights movement could be one of the most effective forces against smoking, and health care professionals should encourage the enactment of smoking restrictions whenever possible.

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Preventing Dependency in the Elderly

Dependency is usually measured in terms of functional measures such as activities of daily living, which includes competencies in feeding, bathing, dressing, toileting, ambulation, and continence. According to a 1982 national survey of long-term care, 19% of the 65-and-over age group had some degree of limitation in their activities of daily living, and 4% of the population was severely disabled. This proportion rises dramatically in the old-age group—that is, 85 years of age and older. In fact, men and women age 85 years and older are four times more likely to be disabled than those aged 65 to 74. Almost half, or about 46%, of persons 85 years and older are disabled compared with only about 13% of persons aged 64 to 74.

Another measure of dependency is nursing home ad missions. Data from the 1985 National Nursing Home Survey indicate slightly less than 5% of the population age 65 years and older reside in nursing homes. This percentage rises dramatically for the older age subgroups, with 10% of persons older than 75 years of age and more than 22% of persons 85 years of age and older living in nursing homes.

The leading chronic conditions causing limitation of activity and loss of independence for the elderly, according to a 1982 survey by the National Center for Health Statistics, were arthritis, hypertension, hearing impairment, heart conditions, orthopedic impairment, sinusitis, visual impairment, diabetes mellitus, varicose veins, and arteriosclerosis. Arthritis and rheumatism, although the leading chronic conditions in the elderly, account for relatively few deaths and only 2% of hospital days. They do, however, account for 16% of all days spent in bed.

One important new concept that has developed in looking at the relationship between mortality and disability has been the calculation of "active life expectancy." Using the longitudinal data of all the persons in Framingham, Katz and colleagues computed the active life expectancy, which they defined as the expected number of years of remaining life in which one remains independent (needs no help in performing activities of daily living). For example, independent persons between the ages of 65 and 69 years had an "active life expectancy" of 10.0 years but a total life expectancy of 16.5 years. Therefore, an average of 6.5 years were lived in a state of functional dependency. A major goal, then, of preventing dependency in the elderly would be to extend the "active life expectancy"—that is, adding life to years and not just years to life. This is perhaps a better statistic to monitor the health of the elderly than just mortality rates or life expectancy tables.

Results of recent studies suggest that, in the absence of chronic diseases that impose limitations on activities, older persons do not have to have a substantial reduction in physical fitness with aging. Many cases of physical decline with aging are simply a matter of deconditioning. Furthermore, 65% of elderly persons living in the community describe their own health as excellent, very good, or good compared with others their age. Several measures can be taken to prevent dependency in the elderly, and the elderly should be targeted for preventive programs. Although some studies have questioned the influence of good health practices on health status and disability in the elderly, recent studies have affirmed the value of basic health practices for the elderly. The findings suggest that important health practices for elderly persons are refraining from smoking (ever or currently), maintaining weight control, engaging in some form of physical activity such as walking or gardening, getting seven to eight hours of sleep a night, and maintaining social networks. More attention also needs to be given to a significant measure of a loss of independence—nursing home placement. Some possible modifiable risk factors for nursing home admissions include functional impairment in activities of daily living, household isolation, a lack of social support, falls, and cognitive impairment. Finally, iatrogenic illnesses contribute to a lot of disability in the elderly and are probably the most preventable diseases in old age. The most common types are inappropriate medications, nosocomial infections, and the overuse of therapeutically imposed bed rest.

Because there are many factors in preventing disability in the elderly that go beyond the traditional disease-specific preventive approach, a multifunctional geriatric assessment is crucial in evaluating the elderly to determine what are the important problems and also to develop the necessary intervention plan to keep the elderly functioning as independently as possible in the community for as long as possible.

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Chemical Contamination of Fish as an Emerging Environmental Health Concern

In California and other states, concern about the the contamination of fish by organic and inorganic chemicals is increasing. In the past three years, the California Department of Health Services has evaluated various fish and game contamination situations and issued health advisories for persons consuming fish taken from certain locations where elevated levels of chemical contaminants are found in fish. The chemicals involved include methylmercury, selenium, DDT, and polychlorinated biphenyls (PCBs). Exposure to some of these chemical substances in the regular daily diet of the general population in this country is unavoidable because virtually all fish have some body burden of the above substances. While clinical illness is not certain to result from eating fish at the higher levels of contamination found, increased regular ingestion could increase the health risk. The health advisories are consumption guidelines incorporating a safety factor, and they specifically consider the greater sensitivity of population subgroups such as pregnant women and young children. They are also specific for certain species of fish found in certain locations. The purpose of these guidelines is to minimize excessive exposure to environmental contaminants.

Some of the specific locations in California for which advisories have been issued are as follows: the Grassland area in Merced County; Harbor Park Lake in Los Angeles County; Lake Nacimiento in San Luis Obispo County; the San Francisco Bay delta region; Clear Lake in Lake County; Salton Sea in Imperial and Riverside counties; southern California, including Santa Monica Bay, Palos Verdes Peninsula, and the Los Angeles-Long Beach Harbor area; Lake Berryessa in Napa County; and Lake Herman in Solano County.

Methylmercury affects the nervous system, with paresthesia as the earliest symptom of poisoning, and it can harm a fetus. Poisoning episodes have resulted from the ingestion of methylmercury-contaminated fish in Japan and contaminated bread in Iraq. A minimal level of clinical effect has been established at 200 ng mercury per ml blood. Selenium at high intake levels can produce gastrointestinal disturbances, a loss of hair and nails, skin lesions, nervous system effects, and, based on animal data, may cause adverse reproductive and developmental effects. Human toxicity has resulted in the United States from overdosing with a selenium supplement containing a dose level many times above that indicated on the label and in China from ingesting contaminated food crops where selenium from stoney coal reached the soil and was taken up by the plants. Selenium intoxication from fish consumption has not been documented. The primary health concern relating to DDT and PCBs is the potential carcinogenic risk. Low birth weights and smaller head circumferences have been observed in newborn infants whose mothers consumed moderate quantities of PCB-contaminated fish from Lake Michigan.

Persons who sport fish should be informed of the health advisories that are published in the state sport fishing regulations obtainable where fishing licenses are sold or by contacting local health officials. Clinicians should also be aware of early clinical manifestions associated with high exposure to these chemical substances and the biologic monitoring methods used for detecting these substances for confirming exposure.

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Ozone Air Pollution

Ozone is a reactive oxidizing gas formed in ambient air by the action of sunlight on automobile exhaust and some industrial emissions. Although control measures undertaken since the passage of the Clean Air Act in 1970 have considerably decreased ozone concentrations to which people are exposed, more than 60 urban areas violate the federal hourly standard of 0.12 ppm. The Los Angeles basin, for example, exceeded this level on 148 days in 1986. Failure to meet this health-based standard has potential clinical implications, as summarized below.

The effects of acute exposure to ambient ozone include cough, chest tightness, substernal pain on inspiration, dyspnea, and a decreased ability to perform sustained exercise. Spirometric tests of people exposed in controlled laboratory settings show a significantly increased airway resistance and bronchial hyperreactivity and decreased forced expiratory volumes at concentrations as low as 0.12 ppm. Persons at risk from acute exposure to such low levels of ozone include adults and children involved in vigorous outdoor activity, such as heavy manual labor, jogging, or cycling. Physical exertion per se is not considered to enhance susceptibility to the effects of a given dose of ozone; rather, increased ventilation augments the effective dose delivered to the lungs. People at rest or doing light exercise, however, do not generally have respiratory symptoms or significant changes in lung function until ozone concentrations approach 0.3 ppm. Although epidemiologic studies indicate that even low concentrations may provoke asthmatic attacks, controlled exposure studies suggest that persons with preexisting pulmonary disease are not remarkably more sensitive to ozone's bronchoconstrictive effects than healthy people.

Children appear to experience pulmonary function decrements of a similar magnitude to those seen in adults, yet do not report increased respiratory symptoms to the same extent, suggesting that they may be less aware of somatic warnings to curtail exposure. This is of interest because stage 1 smog alerts, in which schools are advised to restrict outdoor activities, go into effect when ambient ozone concentrations reach 0.2 ppm, even though symptoms and signs of toxicity are observable in exercising persons at lower concentrations. Furthermore, decrements in lung function have been reported to persist for several days after exposure to ambient ozone concentrations less than 0.2 ppm.

One of the principal uncertainties about ozone's toxicity is the relationship between repeated exposures and chronic respiratory disease. Animal studies suggest that chronic exposure to ozone concentrations occurring in typical urban air can result in centriacinar inflammation and small airway structural changes. Recent epidemiologic evidence suggests the existence of significant associations of photochemical oxidant exposure with an accelerated decline in lung function and with symptoms of chronic respiratory disease; however, this issue has not been adequately explored.

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Nutritional Assessment in a Surgical Practice

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ABSTRACT–Two hundred one sequential admissions to a private surgical practice are examined retrospectively. Admission values for weight, triceps skin fold thickness, mid-arm circumference, serum transferrin, hemoglobin, and total lymphocyte count are reported. The data are reported both for the group as a whole, and for its subgroups: emergency admission, elective admissions, the pediatric-to-young-adult age group, and the elderly. Weight alone is found to be an excellent predictor of all somatic variables and a relatively good predictor of visceral parameters with the exception of the total lymphocyte count. The relative correlation with the serum transferrin is found to be most predictive. The implications of these findings for decision making in screening for nutritional assessment are discussed.

Introduction

Nutritional assessment has come to mean a measure of protein-calorie malnutrition (PCM). The prevalence of malnutrition has been well documented in recent years, particularly among hospitalized patients.[1,3,7,9-12] In particular, there has been an increased tendency to view the problem in a broader perspective, with subsequent findings of hitherto unsuspected deficiencies in a wide range of patients including even younger, seemingly healthy, patients who present to the hospital for both elective and emergency procedures. The essential problem has been to find methods of diagnosing PCM. There has been difficulty in defining terms and in making objective measurements which are reproducible from study to study. There are emerging, however, several parameters that have fairly consistently been shown to be reliable indicators of those patients who are at an increased risk for complications because of nutritional deficiencies. More importantly, studies have shown that correction of the deficiencies, as measured by the return of the parameters to normal levels following appropriate nutritional support, is correlated with a significant decrease in morbidity and mortality following operative procedures.[8,10,12,13,15] These parameters are primarily those which measure somatic and visceral protein stores. The focus on protein grows out of our knowledge the physiology of immediate and long-term starvation. For our purposes, we may think of the human body as consisting of four compartments;[15] carbohydrate, protein, fat, and a fourth compartment of vitamins and trace elements. Carbohydrate, fat, and protein are all relatively interchangeable metabolically, except that the former two can be stored for energey against adverse contingencies, whereas protein cannot. Proteins are, after all, the structural and functional elements, and so their loss means loss of structure and function.[15] It is that loss of "lean body mass" which we refer to as PCM. Studies cite wide ranges in the prevalence of the latter among hospitalized patients and findings of 50%-75% are not uncommon. Indeed, most studies show greater than 50% of any test population deficient in at least one parameter. The question might well be asked, "What levels of deficiency are encountered in the hospitalized patient population in a general surgical practice?"

The following was designed to characterize such a group on the basis of the parameters currently in use with the knowledge that deficiencies in the variables mentioned have all been shown to correlate with increased rates of postoperative complications, particularly infection and frank sepsis. More importantly, if they have all been shown to be of predictive value, do they all need to be measured? Which of the variables is most predictive of the others and of overall PCM?[14]

Material and Methods

Two hundred one sequential admissions to a private surgical practice were examined retrospectively. Table 1 shows the make-up of the sample. One hundred three were male and 98 were female. Ninety-two were emergency room admissions and 109 were elective admissions. Table 1 also shows the distribution of the group, with ten in the pediatric age group; and 76 in the young-adult age group, 20-44; 63 in the middle-age group, 45-65; and 76 in the age group greater than 65. The total distribution by diagnosis is given in Table 2. The parameters measured were all those obtained at the time of admission. Weight (WT), triceps skin fold (TSF), mid-arm circumference (MAC), total lymphocyte count (TLC), serum albumin (ALB), serum transferrin (TFN), and hemoglobin (HGB)

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Table 1
THE SAMPLE OF 201 PATIENTS

			Pedi	*20-44*	*45-64*	*Over 65*
Emergency	Male	52	4	11	9	28
	Female	40	3	12	8	17
	Total	92	7	23	17	45
Elective	Male	51	2	12	18	19
	Female	58	1	17	28	12
	Total	109	3	29	46	31

Table 2
THE DIAGNOSES IN 201 PATIENTS

Hernias	40
Biliary, pancreatic	31
Benign GI	31
Peripherial vascular	24
Breast (5 cancer)	18
Malignant GI	13
Appendicitis	9
Trauma and Burns	8
Anorectal	7
Metastatic CA	4
Cutaneous malignancy	4
Others	12

were measured. An anergy panel for cell-mediated immunity (CMI) and proportions for comparison are appropriately adjusted in the results. TSF and MAC are measured in the standard way recommended by Blackburn et al.[2]

WT is reported as percent of ideal weight for height as recorded in the 1959 Metropolitan Life standard tables. ALB and HGB are measured directly in the laboratory. TFN is either calculated from the TIBC as TFN=(0.8)(TIBC)-43, or directly measured in some instances.[12] TLC is the percentage of lymphocytes times the white blood cell count times 100.[15] Anergy panels were placed in the usual manner using the skin test antigens for mumps, candida, trichophyton, and tuberculosis.

Results and Conclusions

Somatic Measures

1. **Weight** Weight (WT), or weight loss, is said by many to be the single best predictor of decreased cell mass.[5] Its history and time course are of course of greatest significance: is weight loss unexplained or is it intentional? Table 3 shows the overall results for WT both among the total group and among the subgroups of emergency, elective, the group less than 65 years old, and the group greater than 65 years old. Twenty-eight percent of the total group were found to show some deficiency, which was less than that reported in most studies (30%-50%). Seven percent each were found in the mild to moderately depleted range and 14% were severely deficient. Only 16% were depleted among the elective admission, whereas 44% were deficient among the emergencies, with 22% severely deficient among the latter. In the group less than 65 years old, 25% showed some deficiency while in the group older than 65, 36% were deficient, with 26% demonstrating severe depletion.

Table 3
WEIGHT DEFICIENCIES IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	72%	7%	7%	14%
Elective	84%	6%	3%	7%
Emergency	56%	9%	13%	22%
Less than 65 years	75%	10%	8%	7%
Greater than 65 years	64%	3%	7%	26%

2. **Triceps Skin Fold** TSF is really a measure of adipose or energy stores. There has always been some question as to its usefulness in adults, particularly the elderly where edema increases. It is an important measure in the pediatric age group, especially in the newborn where fat is an important source of insulation as well as calories. Figures reported here are in percentage of normal as compiled by the World Health Organization in 1966. Thirty-two percent of the total group showed some deficiency, with 14% severely deficient (Table 4). For elective admissions these figures were only 16% and 7%, while for emergencies they were 43% and 22%, in nearly perfect agreement with the data on WT. Again, as can be seen from Table 4, the data by age group show excellent correlation with those obtained for WT, among those patients in whom both were measured.

Table 4
TRICEPS SKIN FOLDS IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	68%	10%	8%	14%
Elective	77%	12%	4%	7%
Emergency	57%	9%	12%	22%
Less than 65 years	75%	11%	7%	7%
Greater than 65 years	59%	9%	8%	24%

3. **Mid-arm Circumference** The MAC is considered to be perhaps the best direct measure of lean body mass. It is measured at the midpoint between the olecranon and acromion process. It is an area relatively free of edema and will vary only as bone diameter varies.[15] Data for the total group showed 34% with some deficiency and 12% severely depleted. For elective admissions, the data were 23% and 7%; for emergencies, 44% and 17%. For the group less than 65 years old, 27% had some depletion and 6% were severely depleted; for those greater than 65 years old the results were 43% and 23% respectively (Table 5). Again, it would appear that the correlation between all three somatic variables is close among those patients in whom all three are measured, and that any one, ie, WT, is highly predictive of the others. Table 6 demonstrates this correlation for the entire group.

Table 5

MID-ARM CIRCUMFERENCE IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	66%	14%	8%	12%
Elective	77%	14%	2%	7%
Emergency	56%	13%	14%	17%
Less than 65 years	73%	15%	6%	6%
Greater than 65 years	57%	11%	11%	21%

Table 6

SOMATIC MEASURES IN 201 PATIENTS

	Deficiency	*Mild-Mod*	*Severe*
Weight	28%	14%	14%
TSF	32%	18%	14%
MAC	34%	22%	12%

Visceral Measures

The measures of visceral protein are really measures of the nutritional status, in that they measure protein-synthesizing capacity, and that, mainly by the liver. The essential problem with interpretation has always been one of correlation between plasma levels of the entity measured and actual protein synthesis by the liver. The problem with total protein (TP) is exemplary: it is not reliable as a measure because high serum globulin in itself may mask a significant decrease in albumin; only the more costly electrophoretic functions are reliable. Similarly, dehydration may mask a significant hypoproteinemia as a result of hemoconcentration. It is also of note that poor correlation between total protein and changes in body weight are reported.[15]

1. **Serum Albumin** ALB itself is not without problems as a measure. Most notably, there is the problem of its long half-life of 20-21 days. Furthermore, its rate of synthesis is known to be affected by other variables including both the size of the extravascular pool and the blood pressure. In our patient group, (Table 7), 21% showed some deficiency with only 3% severely depleted. Among elective admissions, these figures dropped to only 9% and 0%, whereas among emergency admissions they were 21% and 5%. The under-age-65 group showed 10% with some depletion and none severely depleted, with the over-age-65 group showing 21% and 6% respectively. This would tend to confirm the doubtful value of ALB as a measure of nutritional status. The subtle losses detected by somatic measures, particularly in the younger, elective admission patients, are not reflected in the ALB levels. Its longer half-life makes it a sensitive measure only among older and debilitated patients and not a good measure of the day-to-day status. Correlation with WT is poor in the total group.

Table 7

SERUM ALBUMIN LEVELS IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	79%	11%	7%	3%
Elective	91%	6%	3%	0%
Emergency	69%	16%	10%	5%
Less than 65 years	90%	8%	2%	0%
Greater than 65 years	69%	14%	11%	6%

2. **Serum Transferrin** The serum TFN level is overall a better measure. Its half-life is shorter than that of albumin, being about six to eight days, and is, therefore, a more sensitive indicator of the day-to-day status of the patient. Among the group examined, (Table 8), 36% showed some depletion with 17% severely depleted. For elective admissions, the figures were only 13% and 3%, while for emergencies they were 47% and 23% respectively. The under-age-65 group showed 31% and 15%, while the elderly showed 40% and 18%. Among patients examined for both, there is fairly good correlation between WT and TFN levels, but not nearly as good as between somatic measures alone. It should be noted that TFN levels obtained are calculated. Those determined by radioimmunoassay, (RIA), are more accurate but too expensive to be practical for screening purposes. The less-than-desirable correlation with somatic measures would seem to reinforce the point. More sensitive indicators with half-lives of as little as 12 hours are being developed for RIA. They promise also to be expensive and their correlation with somatic measures has yet to be determined.

Table 8

SERUM TRANSFERRIN LEVELS IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	64%	9%	10%	17%
Elective	87%	3%	7%	3%
Emergency	53%	12%	12%	23%
Less than 65 years	69%	13%	3%	15%
Greater than 65 years	60%	6%	16%	18%

3. **Hemoglobin** Abnormalities in the HGB level are often said to be late indicators of synthetic impairment. Among patients in whom both somatic measures and HGB were determined at admission, we find this to be only moderately the case (Table 9). Of the total group, 21% showed some deficiency, with 8% severely deficient. For elective admissions, the data were 8% and 1%, while emergency admissions showed 34% and 15%. With regard to age, the under-65-age group showed 12% and 3%, with the elderly showing 33% and 15%. The pattern here appears to be one of relative correlation with somatic

Table 9

SERUM HEMOGLOBIN IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	79%	7%	6%	8%
Elective	92%	4%	3%	1%
Emergency	66%	10%	9%	15%
Less than 65 years	88%	6%	3%	3%
Greater than 65 years	67%	8%	10%	15%

measurements but with a smaller shift to abnormal levels among the emergency and elderly patients. As a direct measure, of course, HGB concentration must be interpreted with caution as a parameter of nutritional status, as the total body fluid and possible blood loss must be taken into account.

4. **Total Lymphocyte Count** TLC was unique in this assessment as it did not correlate well with any other measure (Table 10). Among the entire group, 53% showed some deficiency with 11% severely deficient. Forty-three percent and 3% were the figures for electives, and 66% and 22% were those for the emergencies. Figures for the under-age-65 group were 47% and 11%, while for the elderly they were 62% and 11%. In other words, there were fewer normals in all categories with an increased bunching in the mildly to moderately depleted columns for all groups. For our purposes, TLC does not correlate well with any of the somatic measures or indeed any of the other visceral measures. Of course, it may be a good measure, with depressed levels being perhaps the most sensitive indicator of all those measures. Indeed we must take into account other factors which will affect the TLC; ie, infection, inflammation, or any number of factors which may be associated with the patient on the surgical service. For our purposes, however, TLC does not predict where the deficiencies in other categories will be found. It should be noted that lymphocyte function, measured by any number of increasingly sophisticated in vitro methods or by the standard anergy panel in the clinical setting, is also frequently employed as an assessment of nutritional status. Too few subjects were tested among the present group to make comparisons valid. Correlation with the entire group is shown in Table 11.

Table 10
TOTAL LYMPHOCYTE COUNT IN 201 PATIENTS

	Normal	*Mild*	*Moderate*	*Severe*
Total	47%	21%	21%	11%
Elective	57%	29%	11%	3%
Emergency	34%	10%	34%	22%
Less than 65 years	53%	23%	13%	11%
Greater than 65 years	38%	16%	35%	11%

Table 11
NUTRITIONAL DEFICIENCY IN 201 PATIENTS

	Deficiency	*Mild-Mod*	*Severe*
Weight	28%	14%	14%
TSF	32%	18%	14%
MAC	34%	22%	12%
ALB	21%	18%	3%
TFN	36%	19%	17%
HGB	21%	13%	8%
TLC	53%	42%	11%

Discussion

This study was designed to assess the nutritional status of the patient population in a general surgical practice. The questions have centered about several key themes. One has been to test the validity of the claims concerning the prevalence of nutritional depletion. An attempt has been made to characterize the population in a quantitative fashion with respect to its performance. Some attempt has been made to draw specific conclusions concerning which of the variables is or are reliable measures and which may or may not be useful in attempting to draw a profile of the patient's nutritional status. In an age of increasing cost consciousness, it is helpful to know which of the variables are most likely to predict accurately values for the others.

With regard to the first question, the prevalence of the problem, our group as a whole shows at least some depletion in all parameters at a percentage level near the lower range of values reported from other sources. That may reflect the fact that we are examining all admissions from a surgical practice, not a randomly selected group of patients in a hospital. Our population consists of the young as well as the old and an equal proportion of elective and emergency admissions. That we approach the frequently reported ranges, and in fact match their numbers in the severely depleted groups, is very suggestive. It would indeed tend to confirm the impression that the problem of malnutrition is widespread. Among similar subgroups, ie, the elderly, our figures are in good agreement with those reported elsewhere, suggesting that our sample is valid, with data similar to those reported in other similar studies.

Second, with regard to the individual measures of the variables used, we are fairly well able to characterize the population in a matter consistent with other attempts. We can certainly identify the elderly and emergency admissions as being at relatively greater risk. Significantly, we can also identify a statistical portion of the younger elective admissions as being deficient in one or more variables not well predicted by history, physical findings, or diagnoses. No attempt was made here to correlate the findings with postoperative outcome. This would be the next step in better characterizing the present population and identifying those at risk among this sample with more certainty.

Finally, an attempt has been made to draw some conclusions concerning the relative merits of the parameters themselves and in their relationship to one another. An ideal test for identifying patients at risk for post operative complications would have the characteristics listed in Table 12, that is, a test with high sensitivity, high specificity, with low false positives and negatives. Also it should

Table 12
NUTRITIONAL ASSESSMENT–IDENTIFICATION OF THE HIGH RISK PATIENT

1. Consistently positive in patients with malnutrition.
2. Consistently negative in patients with good nutrition.
3. Unaffected by nonnutritional factors.
4. Sensitive to nutritional repletion.

be nutritionally specific and should show a return to normal values after adequate nutritional support. However, no single nutritional measure, to date, consistently meets all of these criteria. For each variable determined, numerous reports can be cited to show that the value being measured has prognostic significance and is, therefore, a useful indicator of nutritional status and a reliable predictor of outcome.

Probably the greatest clinical experience has been accumulated with the Prognostic Nutritional Index, (P.N.I.), developed at the University of Pennsylvania by Mullen.[4] Similarly, correction of deficiencies has been shown to correlate with improved outcome. In ten of our patients, three with gastrointestinal malignancies and seven with benign biliary and gastrointestinal disease, surgery was postponed from seven to 14 days. All ten patients had actual weight loss of over 10% of their usual or desirable premorbid weight, and all showed severe nutritional depletion on assessment. Surgery was performed only when a 10% or more rise in serum transferrin had been observed after the institution of total parenteral nutrition. Although the number is small and we have no controls, we believe that in these ten patients, the postoperative complication rate was significantly reduced. Improvement in surgical technique definitely limits the value of supportive methods such as preoperative parenteral nutrition. However, as long as the complication rate is not zero, they still have their place.[16] The practical question facing the clinician, however, remains to be answered with satisfaction. The competing needs of cost and efficiency on the one hand frequently conflict with those of completeness and accuracy on the other. Nutritional assessment is at present caught up in this dilemma.[6] In asssessing these data from a surgical practice, at least several conclusions are suggested: First, weight is an easily obtained and inexpensive measure and a good predictor of all somatic measures and, at least from a relative point of view, a reliable predictor or indicator of visceral measures, with the exception of TLC. In fact, an evaluation of the patient's weight may be the single most important piece of information as to the patient's nutritional status. Unfortunately, the most predictive method of recording weight change is undetermined, and the manner of expressing weight or weight loss has not yet been standardized.[5] Furthermore, weight is not only easy to obtain, but it is easy to follow during treatment. That it is not immediately responsive to subtle changes in the patient's synthetic capacity is important: for this reason one or more visceral measures should be included in the screening for nutritional assessment. ALB, HGB, and TLC are not the best first line parameters, for reasons discussed previously, and would undoubtedly be obtained anyway during the patient's evaluation. A calculated TFN, or more reliably, a measured one, still provides a good practical parameter to assess synthetic function. Furthermore, like weight, it can be followed during and after nutritional supplementation. Unlike weight, as a visceral measure with short half-life, it is a good supplement to somatic assessment and provides for more responsive follow-up. At least in our population, it seems to correlate well with somatic measures at admission among patients examined for all parameters. Its responsiveness to more subtle changes in status would suggest its use as an adjunct and perhaps as a baseline to the screening assessment. More responsive parameters promise to be forthcoming; their correlation with established variables has yet to be assessed.

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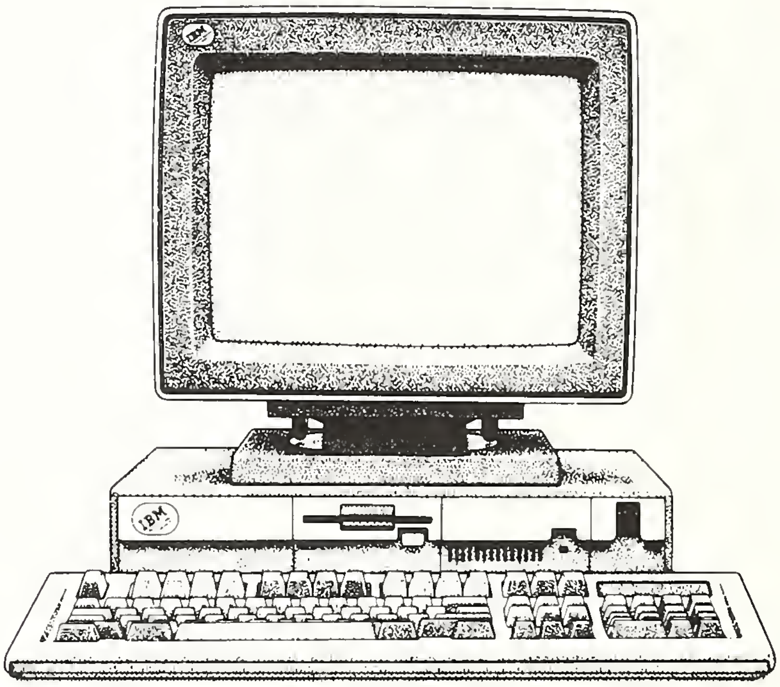

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Acute Pain Management: The Role of Patient-Controlled Analgesia

PAMELA MANWARING, B.S., R.PH. AND DAVID PLATT, PHARM.D.

Pain is an individual and subjective experience generally managed for the hospitalized patient by employing a conventional method of acute pain control. This method most often utilizes parenteral administration of a narcotic (eg, morphine sulfate) given as needed every three to four hours. Despite the frequent use of narcotic analgesic therapy, there are a number of reports documenting inadequate pain relief in many acute and chronically ill patients.[1-3] For example, a) in 1973, Marks and Sachar[1] reported that of 37 medical inpatients 32% remained in severe pain during their hospital stay and an additional 41% were in moderate pain; b) in 1979, Nayman[2] reported that 23% of 138 patients experienced severe postoperative pain; and c) in 1983, Weis et al[3] investigated 100 patients following various surgical procedures and found 5% in severe and 36% in moderate pain.

Problems in Acute Pain Management

The patient, caregiver, and standard regimen of pain control collectively contribute to this history of insufficient pain management. The patient is under physical and psychological stress in unfamiliar surroundings. This may cause him to forego seeking a nurse for his pain medication because of his desire to please the staff and therefore not become a nuisance,[4] or because he does not want to appear weak or afraid.[9]

Patients are often underdosed with analgesics because of the stigma associated with narcotics and addiction. In a consensus of 57 physicians and 70 nurses, 56% and 68% respectively felt that the chances were greater than 6% of a patient becoming addicted to meperidine when given IM every four hours for 10 days.[3] This is high in comparison to another report that, under similar circumstances, only 22% of physicians believed the chances were greater than 6% of addiction.[1] Studies show the incidence of narcotic addiction as a result of narcotic analgesic use in hospitalized patients is low.[5-7] Porter and Jick[5] reported four addiction cases out of 11,882 hospitalized patients treated with narcotics for pain. Miller[6] and Wilson[7] also showed hospitalization-induced dependence on narcotics to be well below 0.1%.

Finally, the conventional narcotic dosing regimen contains several flaws, all of which contribute to the patient's lack of pain relief. First, intermittent parenteral dosing regimens result in a variable pharmacodynamic profile. For example, with morphine sulfate, the effect after IM or SC administration peaks at 20-30 minutes and progressively declines over three to six hours. At peak blood morphine levels, the patient may experience side effects, ie, sedation or possibly respiratory depression. At the end of the dosing interval, during the time at which the blood morphine level drops below therapeutic threshold, the patient experiences pain. Second, the standard dosing schedule does not account for the patient's circadian variation in narcotic analgesia need.[8,14,15] Graves et al[8] report a greater need at midmorning, when the patient is normally awake, compared to a 27-fold decline in need in the early morning hours when the patient normally sleeps. Lastly, there is a well-documented intra- and interpatient variability in narcotic requirements depending on operative procedures and postoperative day.[9,11,12,38]

Clinical Complications Associated With Pain

Postoperative pain has been shown to inhibit early patient ambulation because of poor sleep,[13] indifferent appetite,[13] and impaired pulmonary function.[39] A decrease in total lung volume and increased muscle rigidity may lead to a signficantly increased incidence of pneumonia and atelectasis.[39]

Patient-Controlled Analgesia

Prior to Marks and Sachars' report, the concept of "on demand" analgesia, narcotic administration controlled by the patient, was being investigated.[10,24,25] This concept has developed into what is now referred to as patient-controlled analgesia (PCA), with growing interest seen in developing self-administration devices. PCA involves an intravenous syringe device delivering small increments of narcotic which is activated by the patient using a push button. A lockout system allows the physician's prescribed

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amount of drug to be given at a preset time interval. The narcotic dosage amount and interval can be titrated according to the individual's requirement, which is assessed using either a digital or printed recording of the patient's attempts and amount delivered (eg, over the course of an hour). This system not only eliminates the flaws of standard pain management and utilizes individual patient care, but has been well accepted by patients, physicians, and nurses.[35]

Efficacy has been demonstrated in several studies using PCA which have consistently drawn similar conclusions:

a. There is significant variation in serum levels when narcotic is administered IM as opposed to a consistent serum level when given IV via PCA.[30]

b. There is a greater amount of narcotic used in the IM group compared to the PCA group.[17,30,33]

c. Tamsen et al[19-23] and others[16,30,31,38] demonstrated that there is a large interpatient variability in narcotic need. Tamsen showed that age, sex, body weight, and drug elimination do not correlate with the amount of drug required for analgesia. The use of PCA more closely individualizes the patient's narcotic need.

d. It has been shown that a greater amount of narcotic is required immediately following surgery and that this requirement decreases with time.[11,12] The use of PCA adjusts to this variation in requirement. Citron et al[18] found in eight patients using PCA that more narcotic was administered in the first four hours of use; whereas, Graves et al found in 48 patients using PCA[8] that the maximum decline in narcotic use occures within the first six to eight hours postoperatively.

e. When compared to IM therapy, those patients on PCA demonstrated significantly greater spontaneous activity, ie, walking and moving,[36] a significantly lower incidence of nocturnal awakening,[36] and a greater improvement in pulmonary function following surgery.[37]

f. Patients have expressed a preference for pain control via PCA, both those receiving hospitalized pain control for the first time and those who have received conventional therapy prior to PCA therapy.[11,17,20,27,28,30,31]

A more complete review of specific studies using PCA appears in a recent article by White.[26]

Some caregivers are concerned about using self-administration devices for narcotic delivery because of overdose or abuse potential. Although the risk of significant respiratory depression associated with PCA use is thought to be low, reports have shown that respiratory depression and pCO2 elevation have occurred with PCA use.[18,27,32] Also, device operation problems have been encountered;[34] therefore, it is important that the staff and patient fully understand how the PCA device functions.

Because the concept of PCA accommodates to the individual patient's pain at whatever postoperative time or time of day, prescribing dosage regimens intravenously requires a different approach. The dose and lockout interval need to be titrated according to individual requirement. Table 1 outlines the initial starting points of some commonly used narcotics for acute pain in the hospital.

Table 1
INTRAVENOUS DOSES AND LOCKOUT INTERVALS
RECOMMENDED FOR VARIOUS NARCOTICS USED IN PCA[29]

	Bolus (mg)	*Lockout interval (min)*
Fentanyl	0.015-0.075	3-10
Hydromorphine	0.1-0.5	5-15
Morphine sulfate	0.5-3.0	5-20
Meperidine sulfate	5.0-30.0	5-15
Nalbuphine hydrochloride	1.0-5.0	5-15

Conclusion

The basic concept of patient-controlled analgesia is the administration of small amounts of IV narcotic at more frequent times to allow patient comfort on demand. PCA improves acute pain management by allowing patients to participate directly in their analgesic therapy, thus avoiding inappropriate peak and trough levels with their associated problems. Also, patients' postoperative sleep-wake cycles and activity levels return to normal faster with PCA management.

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Guidelines for Effective School Health Education to Prevent the Spread of AIDS

CENTERS FOR DISEASE CONTROL

Introduction

Since the first cases of acquired immunodeficiency syndrome (AIDS) were reported in the United States in 1981, the human immunodeficiency virus (HIV) that causes AIDS and other HIV-related diseases has precipitated an epidemic unprecedented in modern history. Because the virus is transmitted almost exclusively by behavior that individuals can modify, educational programs to influence relevant behavior can be effective in preventing the spread of HIV.[1-5]

The guidelines below have been developed to help school personnel and others plan, implement, and evaluate educational efforts to prevent unnecessary morbidity and mortality associated with AIDS and other HIV-related illnesses. The guidelines incorporate principles for AIDS education that were developed by the President's Domestic Policy Council and approved by the President in 1987 (see Appendix I).

The guidelines provide information that should be considered by persons who are responsible for planning and implementing appropriate and effective strategies to teach young people about how to avoid HIV infection. These guidelines should not be construed as rules, but rather as a source of guidance. Although they specifically were developed to help **school personnel**, personnel from other organizations should consider these guidelines in planning and carrying out effective education about AIDS for youth who do **not** attend school and who may be at high risk of becoming infected. As they deliberate about the need for and content of AIDS education, educators, parents, and other concerned members of the community should consider the prevalence of behavior that increases the risk of HIV infection among young people in their communities. Information about the nature of the AIDS epidemic, and the extent to which young people engage in behavior that increases the risk of HIV infection, is presented in Appendix II.

Information contained in this document was developed by CDC in consultation with individuals appointed to represent the following organizations:

American Academy of Pediatrics
American Association of School Administrators
American Public Health Association
American School Health Association
Association for the Advancement of Health Education
Association of State and Territorial Health Officers
Council of Chief State School Officers
National Congress of Parents and Teachers
National Council of Churches
National Education Association
National School Boards Association
Society of State Directors of Health, Physical Education, Recreation and Dance
U.S. Department of Education
U.S. Food and Drug Administration
U.S. Office of Disease Prevention and Health Promotion

Consultants included a director of health education for a state department of education, a director of curriculum and instruction for a local education department, a health education teacher, a director of school health programs for a local school district, a director of a state health department, a deputy director of a local health department, and an expert in child and adolescent development.

Planning and Implementing Effective School Health Education about AIDS

The Nation's public and private schools have the capacity and responsibility to help assure that young people understand the nature of the AIDS epidemic and the specific actions they can take to prevent HIV infection, especially during their adolescence and young adulthood. The specific scope and content of AIDS education in schools should be locally determined and should be consistent with parental and community values.

Because AIDS is a fatal disease and because educating young people about becoming infected through sexual contact can be controversial, school systems should obtain broad community participation to ensure that school health education policies and programs to prevent the spread of AIDS are locally determined and are consistent with community values.

Morbidity and Mortality Weekly Reports, Vol. 37, No. S-2, 1988.

The development of school district policies on AIDS education can be an important first step in developing an AIDS education program. In each community, representatives of the school board, parents, school administrators and faculty, school health services, local medical societies, the local health department, students, minority groups, religious organizations, and other relevant organizations can be involved in developing policies for school health education to prevent the spread of AIDS. The process of policy development can enable these representatives to resolve various perspectives and opinions, to establish a commitment for implementing and maintaining AIDS education programs, and to establish standards for AIDS education program activities and materials. Many communities already have school health councils that include representatives from the aforementioned groups. Such councils facilitate the development of a broad base of community expertise an input, and they enhance the coordination of various activities within the comprehensive school health program.[6]

AIDS education programs should be developed to address the needs and the developmental levels of students and of school-age youth who do not attend school, and to address specific needs of minorities, persons for whom English is not the primary language, and persons with visual or hearing impairments or other learning disabilities. Plans for addressing students' questions or concerns about AIDS at the early elementary grades, as well as for providing effective school health education about AIDS at each grade from late elementary/middle school through junior/senior high school, including educational materials to be used, should be reviewed by representatives of the school board, appropriate school administrators, teachers, and parents before being implemented.

Education about AIDS may be most appropriate and effective when carried out within a more comprehensive school health education program that establishes a foundation for understanding the relationships between personal behavior and health.[7-9] For example, education about AIDS may be more effective when students at appropriate ages are more knowledgeable about sexually transmitted diseases, drug abuse, and community health. It may also have greater impact when they have opportunities to develop such qualities as decision-making and communication skills, resistance to persuasion, and a sense of self-efficacy and self-esteem. However, education about AIDS should be provided as rapidly as possible, even if it is taught initially as a separate subject.

State departments of eduation and health should work together to help local departments of education and health throughout the state collaboratively accomplish effective school health education about AIDS. Although all schools in a state should provide effective education about AIDS, priority should be given to areas with the highest reported incidence of AIDS cases.

Preparation of Education Personnel

A team of representatives including the local school board, parent-teachers associations, school administrators, school physicians, school nurses, teachers, educational support personnel, school counselors, and other relevant school personnel should receive general training about a) the nature of the AIDS epidemic and means of controlling its spread, b) the role of the school in providing education to prevent transmission of HIV, c) methods and materials to accomplish effective programs of school health education about AIDS, and d) school policies for students and staff who may be infected. In addition, a team of school personnel responsible for teaching about AIDS should receive more specific training about AIDS education. All school personnel, especially those who teach about AIDS, periodically should receive continuing education about AIDS to assure that they have the most current information about means of controlling the epidemic, including up-to-date information about the most effective health education interventions available. State and local departments of education and health, as well as colleges of education, should assure that such in-service training is made available to all schools in the state as soon as possible and that continuing in-service and pre-service training is subsequently provided. The local school board should assure that release time is provided to enable school personnel to receive such in-service training.

Programs Taught by Qualified Teachers

In the elementary grades, students generally have one regular classroom teacher. In these grades, education about AIDS should be provided by the regular classroom teacher because that person ideally should be trained and experienced in child development, age-appropriate teaching methods, child health, and elementary health education methods and materials. In addition, the elementary teacher usually is sensitive to normal variations in child development and aptitudes within a class. In the secondary grades, students generally have a different teacher for each subject. In these grades, the secondary school health education teacher preferably should provide education about AIDS, because a qualified health education teacher will have training and experience in adolescent development, age-appropriate teaching methods, adolescent health, and secondary school health education methods and materials (including methods and materials for teaching about such topics as human sexuality, communicable diseases, and drug abuse). In secondary schools that do not have a qualified health education teacher, faculty with similar training and good rapport with students should be trained specifically to provide effective AIDS education.

Purpose of Effective Education about AIDS

The principal purpose of education about AIDS is to prevent HIV infection. The content of AIDS education should be developed with the active involvement of parents and should address the broad range of behavior exhibited by young people. Educational programs should assure that young people acquire the knowledge and skills they will need to adopt and maintain types of behavior that virtually eliminate their risk of becoming infected.

School systems should make programs available that will enable and encourage young people who **have not** engaged in sexual intercourse and who **have not** used illicit drugs to continue to—

- Abstain from sexual intercourse until they are ready to establish a mutually monogamous relationship within the context of marriage;
- Refrain from using or injecting illicit drugs.

For young people who **have** engaged in sexual intercourse or who **have** injected illicit drugs, school programs should enable and encourage them to—

- Stop engaging in sexual intercourse until they are ready to establish a mutually monogamous relationship within the context of marriage;
- To stop using or injecting illicit drugs.

Despite all efforts, some young people may remain unwilling to adopt behavior that would virtually eliminate their risk of becoming infected. Therefore, school systems, in consultation with parents and health officials, should provide AIDS education programs that address preventive types of behavior that should be practiced by persons with an increased risk of acquiring HIV infection. These include:

- Avoiding sexual intercourse with anyone who is known to be infected, who is at risk of being infected, or whose HIV infection status is not known;
- Using a latex condom with spermicide if they engage in sexual intercourse;
- Seeking treatment if addicted to illicit drugs;
- Not sharing needles or other injection equipment;
- Seeking HIV counseling and testing if HIV infection is suspected.

State and local education and health agencies should work together to assess the prevalence of these types of risk behavior, and their determinants, over time.

Content

Although information about the biology of the AIDS virus, the signs and symptoms of AIDS, and the social and economic costs of the epidemic might be of interest, such information is not the essential knowledge that students must acquire in order to prevent becoming infected with HIV. Similarly, a single film, lecture, or school assembly about AIDS will not be sufficient to assure that students develop the complex understanding and skills they will need to avoid becoming infected.

Schools should assure that students receive at least the essential information about AIDS, as summarized in sequence in the following pages, for each of three grade-level ranges. The exact grades at which students receive this essential information should be determined locally, in accord with community and parental values, and thus may vary from community to community. Because essential information for students at higher grades requires an understanding of information essential for students at lower grades, secondary school personnel will need to assure that students understand basic concepts before teaching more advanced information. Schools simultaneously should assure that students have opportunities to learn about emotional and social factors that influence types of behavior associated with HIV transmission.

Early Elementary School

Education about AIDS for students in early elementary grades principally should be designed to allay excessive fears of the epidemic and of becoming infected.

AIDS is a disease that is causing some adults to get very sick, but it does not commonly affect children.

AIDS is very hard to get. You cannot get it just by being near or touching somone who has it.

Scientists all over the world are working hard to find a way to stop people from getting AIDS and to cure those who have it.

Late Elementary/Middle School

Education about AIDS for students in late elementary/middle school grades should be designed with consideration for the following information.

Viruses are living organisms too small to be seen by the unaided eye.

Viruses can be transmitted from an infected person to an uninfected person through various means.

Some viruses cause disease among people.

Persons who are infected with some viruses that cause disease may not have any signs or symptoms of disease.

AIDS (an abbreviation for acquired immunodeficiency syndrome) is caused by a virus that weakens the ability of infected individuals to fight off disease.

People who have AIDS often develop a rare type of severe pneumonia, a cancer called Kaposi's sarcoma, and certain other diseases that healthy people normally do not get.

About 1 to 1.5 million of the total population of approximately 240 million Americans currently are infected with the AIDS virus and consequently are capable of infecting others.

People who are infected with the AIDS virus live in every state in the United States and in most other countries of the world. Infected people live in cities as well as in suburbs, small towns, and rural areas. Although most infected people are adults, teenagers can also become infected. Females as well as males are infected. People of every race are infected, including whites, blacks, Hispanics, Native Americans, and Asians/Pacific Islanders.

The AIDS virus can be transmitted by sexual contact with an infected person; by using needles and other injection equipment that an infected person has used; and from an infected mother to her infant before or during birth.

A small number of doctors, nurses, and other medical personnel have been infected when they were directly exposed to infected blood.

It sometimes takes several years after becoming infected with the AIDS virus before symptoms of the disease appear.

Thus, people who are infected with the virus can infect other people—even though the people who transmit the infection do not feel or look sick.

Most infected people who develop symptoms of AIDS only live about 2 years after their symptoms are diagnosed.

The AIDS virus cannot be caught by touching someone who is infected, by being in the same room with an infected person, or by donating blood.

Junior High/Senior High School

Education about AIDS for students in junior/senior high school grades should be developed and presented taking into consideration the following information.

The virus that causes AIDS, and other health problems, is called **human immunodeficiency virus**, *or HIV.*

The risk of becoming infected with HIV can be virtually eliminated by not engaging in sexual activities and by not using illegal and intravenous drugs.

Sexual transmission of HIV is not a threat to those uninfected individuals who engage in mutually monogamous sexual relations.

HIV may be transmitted in any of the follwing ways: a) by sexual contact with an infected person (penis/vagina, penis/rectum, mouth/vagina, mouth/penis, mouth/rectum); b) by using needles or other injection equipment that an infected person has used; c) from an infected mother to her infant before or during birth.

A small number of doctors, nurses, and other medical personnel have been infected when they were directly exposed to infected blood.

The following are at increased risk of having the virus that causes AIDS and consequently of being infectious: a) persons with clinical or laboratory evidence of infection; b) males who have had sexual intercourse with other males; c) persons who have injected illegal drugs; d) persons who have had numerous sexual partners, including male or female prostitutes; e) persons who received blood clotting products before 1985; f) sex partners of infected persons or persons at increased risk; and g) infants born to infected mothers.

The risk of becoming infected is increased by having a sexual partner who is at increased risk of having contracted the AIDS virus (as identified previously), practicing sexual behavior that results in the exchange of body fluids (i.e., semen, vaginal secretions, blood), and using unsterile needles or paraphernalia to inject drugs.

Although no transmission from deep, open-mouth (i.e., "French") kissing has been documented, such kissing theoretically could transmit HIV from an infected to an uninfected person through direct exposure of mucous membranes to infected blood or saliva.

In the past, medical use of blood, such as transfusing blood and treating hemophiliacs with blood clotting products, has caused some people to become infected with HIV. However, since 1985 all donated blood has been tested to determine whether it is infected with HIV; moreover, all blood clotting products have been made from screened plasma and have been heated to destroy any HIV that might remain in concentrate. Thus, the risk of becoming infected with HIV from blood transfusions and from blood clotting products is virtually eliminated. Cases of HIV infection caused by these medical uses of blood will continue to be diagnosed, however, among people who were infected by these means before 1985.

Persons who continue to engage in sexual intercourse with persons who are at increased risk or whose infection status is unknown should use a latex condom (not natural membrane) to reduce the likelihood of becoming infected. The latex condom must be applied properly and used from start to finish for every sexual act. Although a latex condom does not provide 100% protection—because it is possible for the condom to leak, break, or slip off—it provides the best protection for people who do not maintain a mutually monogamous relationship with an uninfected partner. Additional protection may be obtained by using spermicides that seem active against HIV and other sexually transmitted organisms in conjunction with condoms.

Behavior that prevents exposure to HIV also may prevent unintended pregnancies and exposure to the organisms that cause Chlamydia *infection, gonorrhea, herpes, human papillomavirus, and syphilis.*

Persons who believe they may be infected with the AIDS virus should take precautions not to infect others and to seek counseling and antibody testing to determine whether they are infected. If persons **are not** *infected, counseling and testing can relieve unnecessary anxiety and reinforce the need to adopt or continue practices that reduce the risk of infection. If persons* **are** *infected, they should: a) take precautions to protect sexual partners from becoming infected; b) advise previous and current sexual or drug-use partners to receive counseling and testing; c) take precautions against becoming pregnant; and d) seek medical care and counseling about other medical problems that may result from a weakened immunologic system.*

More detailed information about AIDS, including information about how to obtain counseling and testing for HIV, can be obtained by telephoning the AIDS National Hotline (toll free) at 800-342-2437; the Sexually Transmitted Diseases National Hotline (toll free) at 800-227-8922; or the appropriate state or local health department (the telephone number of which can be obtained by calling the local information operator).

Curriculum Time and Resources

Schools should allocate sufficient personnel time and resources to assure that policies and programs are developed and implemented with appropriate community involvement, curricula are well-planned and sequential, teachers are well-trained, and up-to-date teaching methods and materials about AIDS are available. In addition, it is crucial that sufficient classroom time be provided at **each** grade level to assure that students acquire essential knowledge appropriate for that grade level, and have time to ask questions and discuss issues raised by the information presented.

Program Assessment

The criteria recommended in the foregoing "Guidelines for Effective School Health Education To Prevent the Spread of AIDS" are summarized in the following nine assessment criteria. Local school boards and administrators can assess the extent to which their programs are consistent with these guidelines by determining the extent to which their programs meet each point shown below. Personnel in state departments of education and health also can use these criteria to monitor the extent to which schools in the state are providing effective health education about AIDS.

1. To what extent are parents, teachers, students, and appropriate community representatives involved in developing, implementing, and assessing AIDS education policies and programs?

2. To what extent is the program included as an important part of a more comprehensive school health education program?

3. To what extent is the program taught by regular classroom teachers in elementary grades and by qualified health education teachers or other similarly trained personnel in secondary grades?

4. To what extent is the program designed to help students acquire essential knowledge to prevent HIV infection at each appropriate grade?

5. To what extent does the program describe the benefits of abstinence for young people and mutually monogamous relationships within the context of marriage for adults?

6. To what extent is the program designed to help teenage students avoid specific types of behavior that increase the risk of becoming infected with HIV?

7. To what extent is adequate training about AIDS provided for school administrators, teachers, nurses, and counselors—especially those who teach about AIDS?

8. To what extent are sufficient program development time, classroom time, and educational materials provided for education about AIDS?

9. To what extent are the processes and outcomes of AIDS education being monitored and periodically assessed?

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Appendix 1

The President's Domestic Policy Council's Principles for AIDS Education

The following principles were proposed by the Domestic Policy Council and approved by the President in 1987:

Despite intensive research efforts, prevention is the only effective AIDS control strategy at present. Thus, there should be an aggressive Federal effort in AIDS education.

The scope and content of the school portion of this AIDS education effort should be locally determined and should be consistent with parental values.

The Federal role should focus on developing and conveying accurate health information on AIDS to the educators and others, not mandating a specific school curriculum on this subject, and trusting the American people to use this information in a manner appropriate to their community's needs.

Any health information developed by the Federal Government that will be used for education should encourage responsible sexual behavior—based on fidelity, commitment, and maturity, placing sexuality within the context of marriage.

Any health information provided by the Federal Government that might be used in school should teach that children should not engage in sex and should be used with the consent and involvement of parents.

Appendix II

The Extent of AIDS and Indicators of Adolescent Risk

Since the first cases of acquired immunodeficiency syndrome (AIDS) were reported in the United States in 1981, the human immunodeficiency virus (HIV) that causes AIDS and other HIV-related diseases has precipitated an epidemic unprecedented in modern history. Although in 1985, fewer than 60% of AIDS cases in the United States were reported among persons residing outside New York City and San Francisco, by 1991 more than 80% of the cases will be reported from other localities.[1]

It has been estimated that from 1 to 1.5 million persons in the United States are infected with HIV,[1] and, because there is no cure, infected persons are potentially capable of infecting others indefinitely. It has been predicted that 20%-30% of individuals currently infected will develop AIDS by the end of 1991.[1] Fifty percent of those diagnosed as having AIDS have not survived for more than about 1.5 years beyond diagnosis, and only about 12% have survived for more than 3 years.[2]

By the end of 1987, about 50,000 persons in the United States had been diagnosed as having AIDS, and about 28,000 had died from the disease.[2] Blacks and Hispanics, who make up about 12% and 6% of the U.S. population, respectively, disproportionately have contracted 25% and 14% of all reported AIDS cases.[3] It has been estimated that during 1991, 74,000 cases of AIDS will be diagnosed, and 54,000 persons will die from the disease. By the end of that year, the total number of deaths caused by AIDS will be about 179,000.[1] In addition, health care and supportive services for the 145,000 persons projected to be living with AIDS in that year will cost our Nation an estimated $8-$10 billion in 1991 alone.[1] The World Health Organization projects that by 1991, 50-100 million persons may be infected worldwide.[4] The magnitude and seriousness of this epidemic requires a systematic and concerted response from almost every institution in our society.

A vaccine to prevent transmission of the virus is not expected to be developed before the next decade, and its use would not affect the number of persons already infected by that time. A safe and effective antiviral agent to treat those infected is not expected to be available for general use within the next several years. The Centers for Disease Control,[5] the National Academy of Science,[6] the Surgeon General of the United States,[7] and the U.S. Department of Education[8] have noted that in the absence of a vaccine or therapy, educating individuals about actions they can take to protect themselves from becoming infected is the most effective means available for controlling the epidemic. Because the virus is transmitted almost exclusively as a result of behavior individuals can modify (e.g., by having sexual contact with an infected person or by sharing intravenous drug paraphernalia with an infected person), educational programs designed to influence relevant types of behavior can be effective in controlling the epidemic.

A significant number of teenagers engage in behavior that increases their risk of becoming infected with HIV. The percentage of metropolitan teenage girls who had ever had sexual intercourse increased from 30%-45% between 1971 and 1982. The average age at first intercourse for females remained at approximately 16.2 years between 1971 and 1979.[9] The average proportion of never-married teenagers who have ever had intercourse increases with age from 14 through 19 years. In 1982, the percentage of never-married girls who reported having engaged in sexual intercourse was as follows: approximately 6% among 14-year-olds,[10] 18% among 15-year-olds, 29% among 16-year-olds, 40% among 17-year-olds, 54% among 18-year-olds, and 66% among 19-year-olds.[11] Among never-married boys living in metropolitan areas, the percentage who reported having engaged in sexual intercourse was as follows: 24% among 14-year olds, 35% among 15-year-olds, 45% among 16-year-olds, 56% among 17-year-olds, 66% among 18-year-olds, and 78% among 19-year-olds.[9,12] Rates of sexual experience (e.g., percentage having had intercourse) are higher for black teenagers than for white teenagers at every age and for both sexes.[11,12]

Male homosexual intercourse is an important risk factor for HIV infection. In one survey conducted in 1973, 5% of 13- to 15-year-old boys and 17% of 16- to 19-year-old boys reported having had at least one homosexual experience. Of those who reported having had such an experience, most (56%) indicated that the first homosexual experience had occurred when they were 11 or 12 years old. Two percent reported that they currently engaged in homosexual activity.[13]

Another indicator of high-risk behavior among teenagers is the number of cases of sexually transmitted diseases they contract. Approximately 2.5 million teenagers are affected with a sexually transmitted disease each year.[14]

Some teenagers also are at risk of becoming infected with HIV through illicit intravenous drug use. Findings from a national survey conducted in 1986 of nearly 130 high schools indicated that although overall illicit drug use seems to be declining slowly among high school seniors, about 1% of seniors reported having used heroin and 13% reported having used cocaine within the previous year.[15] The number of seniors who injected each of these drugs is not known.

Only 1% of all the persons diagnosed as having AIDS have been under age 20;[2] most persons in this group had been infected by transfusion or perinatal transmission. However, about 21% of all the persons diagnosed as having AIDS have been 20-29 years of age. Given the long incubation period between HIV infection and symptoms that lead to AIDS diagnosis (3 to 5 years or more), some fraction of those in the 20- to 29-year-age group diagosed as having AIDS were probably infected while they were still teenagers.

Among military recruits screened in the period October 1985-December 1986, the HIV seroprevalence rate for persons 17-20 years of age (0.6/1,000) was about half the rate for recruits in all age groups (1.5/1,000).[16] These data have lead some to conclude that teenagers and young adults have an appreciable risk of infection and that the risk may be relatively constant and cumulative.[17]

Reducing the risk of HIV infection among teenagers is important not only for their well-being but also for the children they might produce. The birth rate for U.S. teenagers is among the highest in the developed world;[18] in 1984, this group accounted for more than 1 million pregnancies. During that year the rate of pregnancy among sexually active teenage girls 15-19 years of age was 233/1,000 girls.[19]

Although teenagers are at risk of becoming infected with and transmitting the AIDS virus as they become sexually active, studies have shown that they do not believe they are likely to become infected.[20,21] Indeed, a random sample of 860 teenagers (ages 16-19) in Massachusetts revealed that, although 70% reported they were sexually active (having sexual intercourse or other sexual contact), only 15% of this group reported changing their sexual behavior because of concern about contracting AIDS. Only 20% of those who changed their behavior selected effective methods such as abstinence or use of condoms.[20] Most teenagers indicated that they want more information about AIDS.[20,21]

Most adult Americans recognize the early age at which youth need to be advised about how to protect themselves from becoming infected with HIV and recognize that the schools can play an important role in providing such education. When asked in a November 1986 nationwide poll whether children should be taught about AIDS in school, 83% of Americans agreed, 10% disagreed, and 7% were not sure.[22] According to information gathered by the United States Conference of Mayors in December of 1986, 40 of the Nation's 73 largest school districts were providing education about AIDS, and 24 more were planning such education.[23] Of the districts that offered AIDS education, 63% provided it in 7th grade, 60% provided it in 9th grade, and 90% provided it in 10th grade. Ninety-eight percent provided medical facts about AIDS, 78% mentioned abstinence as a means of avoiding infection, and 70% addressed the issues of avoiding high-risk sexual activities, selecting sexual partners, and using condoms. Data collected by the National Assocation of State Boards of Education in the summer of 1987 indicated that a) 15 states had mandated comprehensive school health education; eight had mandated AIDS education; b) 12 had legislation pending on AIDS education, and six had state board of education actions pending; c) 17 had developed curricula for AIDS education, and seven more were developing such materials; and d) 40 had developed policies on admitting students with AIDS to school.[24]

The Nation's system of public and private schools has a strategic role to play in assuring that young people understand the nature of the epidemic they face and the specific actions they can take to protect themselves from becoming infected—especially during their adolescence and young adulthood. In 1984, 98% of 14 and 15 year-olds, 92% of 16 and 17 year-olds, and 50% of 18 and 19 year-olds were in school.[25] In that same year, about 615,000 14- to 17-year-olds and 1.1 million 18- to 19-year-olds were not enrolled in school and had not completed high school.[26]

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Mercury Exposure in a High School Laboratory—Connecticut

On December 8, 1986, 22 students and a teacher in a Connecticut high school chemistry laboratory were exposed to mercury vapor. The class was conducting an oxidation reduction experiment that called for silver oxide. However, mercuric oxide had been used because silver oxide was not available.

The experiment was performed at eleven work stations; exhaust hoods in the classroom were not turned on. Each experiment used 1.75 g of mercuric oxide to obtain a theoretical yield of 1.62 g of elemental mercury. The mercuric oxide was placed in a crucible and heated over a burner flame for 15 minutes to drive off the oxygen. The teacher stopped the experiment when he learned that the yields were lower than expected, and, therefore, mercury was being vaporized. He turned on the hoods and had the students clean out the crucibles. The experiment had started at approximately 8:15 a.m.; the students had left the room by 9:00 a.m. The school then called the local fire department and the Toxic Hazards Section of the Connecticut Department of Health Services for assistance in determining the extent of the possible mercury exposure.

The maximum concentration of mercury in the air was estimated at 50 mg/m^3 (10.9 g total mercury lost ÷ 219 m^3 air volume of room).* The mercury saturation point in air at 20°C (68°F) is 15 mg/m^3.[1] The excess 35 mg/m^3 of mercury that appears to have been lost may have condensed on surfaces in the room. The maximum dose, or body burden, to each student was estimated at 9.3 mg.†

Air measurements for mercury were taken in the laboratory after it had been ventilated for several hours. The mercury level was 0.008 mg/m^3 with the windows open and hoods on. However, when the laboratory was closed and the hoods were turned off for 25 minutes, the level rose to 0.04 mg/m^3 (the American Conference of Government Industrial Hygienists time-weighted average is 0.05 mg/m^3). This five-fold increase may have been due to vaporization of the condensed mercury from surfaces in the room. Mercury levels were measured again the day after the incident (December 9), and school personnel were given instructions for cleanup. On December 12, mercury levels in the air in the room ranged from 0.002 to 0.003 mg/m^3. School officials were told they could resume use of the classroom.

On December 11, urine samples were obtained from the 23 persons who were in the classroom during the experiment. Eight persons had urine levels of mercury at or above 30 μg/L, the maximum level considered acceptable.[2] On January 20, 1987, repeat tests showed that six of the eight students still had urine mercury levels above 30 μg/L. School officials decided to have follow-up testing performed on the remaining 15 persons in the class. The urine mercury level for all but one of these 15 persons had increased from the original value, and some had risen to 30 μg/L or above. The highest level was 72 μg/L. Testing of a control group to determine the normal average urine mercury level for unexposed students at the school was also requested. However, school officials did not allow control samples to be obtained. Additional follow-up testing was conducted on February 24, 1987, and again on March 31, 1987. On February 24, 1987, everyone in the class, including the teacher, had a mercury level either at or below 30 μg/L. On March 31, 1987, one student had a mercury level of 37 μg/L; all others remained at or below 30 μg/L.

Reported by: M Shelnitz, H Rao, PhD, CJ Dupuy, MS, SM, B Toal, MSPH, M Carter, MD, JL Hadler, MD, MPH, State Epidemiologist, State of Connecticut Dept of Health Svcs. Div of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control CDC.

Editorial Note: The biologic half-life for mercury vapor ranges from 35 to 90 days.[3] Immediately after exposure, fecal excretion of mercury is predominant; renal excretion increases with time.[3] Careful behavioral and neurological monitoring is recommended when urine levels are 100 μg/L or greater.[4] Seventy-eight days passed between the students' exposure on December 8, 1986, and thee test on February 24, 1987, in which all urine mercury levels were at or below 30 μg/L. The fact that one to two biologic half-lives had passed during this time probably explains the decrease in urine mercury concentrations.

Organic mercury, which is predominantly methyl mercury, and elemental mercury pose different risks. These differences result from the greater intake of organic mercury, which is obtained through the diet, and from the intrinsic toxicities of both forms of mercury.[5] High doses of methyl mercury can produce irreversible destruction of neurons in the visual cortex and cerebellum and lead to a permanent narrowing of the visual field and signs of ataxia.[5] The effects of inhaled mercury vapor on the nervous system are usually reversible, particularly if they are mild.[5]

Much of the information on elemental mercury vapor is qualitative rather than quantitative, but good quantitative dose-response data are available for methyl mercury. Since methylated mercury poses greater risk than vaporized mercury, it was considered feasible to use these data in analyzing the possible risk of adverse effects in the Connecticut incident. Methyl mercury exposure has been shown to cause neurological effects at body-burden levels of between 25 and 50 mg.[3] The students' estimated body burden of 9.3 mg was well below these values; therefore, neurotoxic effects were not anticipated. Acute renal effects were not anticipated either because they are generally caused by inorganic mercury salts.[3]

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* This concentration is based on an assumption that the lost mercury had completely vaporized and had thoroughly mixed with the air in the room.

† Body burden was estimated using the value of the mercury saturation point in air and assuming 100% absorption of mercury in the lungs and a breathing rate of 20 m^3 per 24 hours for a period of ¾ of an hour.

The appropriate method for determining risks associated with toxic chemical exposures is to measure and compare ambient concentrations and body burdens. Such analysis allows for the examination of factors that can affect absorption at different exposure levels. However, as in the incident reported here, such data are not always available. In the absence of good monitoring data, estimated body burden must be used to assess risk.

The problem that occurred at this high school could occur at other schools. Consequently, it is recommended that mercuric oxide not be substituted for silver oxide. In the event of mercury exposure, workers assigned to cleanup should be warned of the danger involved and instructed in safety precuations. Also, students should be trained in the proper use of laboratory safety equipment such as exhaust hoods, goggles, gloves, aprons, and fire extinguishers as well as in the proper disposal of toxic chemicals that are used in classroom experiments.

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MEDICAL COURTESY CARD PROGRAM (THE GREEN CARD)

COMMON QUESTIONS

Q. IF I ACCEPT THE MEDICAL COURTESY CARD (GREEN CARD), DO I CHARGE THE PATIENT FOR THE 20% CO-INSURANCE (CO-PAY)?

A. YES! BY ACCEPTING THE MEDICAL COURTESY CARD YOU ONLY ARE AGREEING TO ACCEPT MEDICARE ASSIGNMENT. WHEN YOU ACCEPT MEDICARE ASSIGNMENT, YOU LIMIT YOUR REIMBURSEMENT TO THE "ALLOWABLE CHARGES" AS DETERMINED BY MEDICARE. WHEN YOU SUBMIT THE CLAIM TO MEDICARE ON ASSIGNMENT, MEDICARE REIMBURSES YOU FOR ONLY 80% OF THE APPROVED CHARGES. **THE REMAINING 20% OF THE BILL IS THE RESPONSIBILITY OF THE PATIENT, REGARDLESS OF WHETHER OR NOT THE PATIENT HAS ANOTHER INSURANCE COVERAGE.** IN FACT, HCFA REGULATIONS **REQUIRE** THAT YOU ALWAYS ATTEMPT TO COLLECT THE 20% CO-PAY FROM THE PATIENT.

ALL MEDICAL COURTESY CARD PATIENTS ARE INFORMED OF THIS REQUIREMENT BOTH AT THE TIME THEY APPLY AND AT THE TIME THEY RECEIVE THEIR MEDICAL COURTESY CARDS IN THE MAIL. IF THERE IS ANY QUESTION IN THEIR MINDS, PLEASE HAVE THEM CALL THE MEDICAL SOCIETY AT 1-800-843-4854.

Q. WHAT DOES THE TERM "CO-INSURANCE" MEAN IN REFERENCE TO MEDICARE?

A. "CO-INSURANCE" IS AN INSURANCE TERM THAT REFERS TO THE PORTION OF THE MEDICAL CLAIM THAT THE PATIENT IS RESPONSIBLE FOR PAYING, (SOMETIMES REFERRED TO AS THE "CO-PAY"). WITH MEDICARE, CO-INSURANCE REFERS TO 20% OF THE ALLOWABLE CHARGES. THE MEDICARE PATIENT IS ALWAYS RESPONSIBLE FOR PAYING AT LEAST THE 20% OF THE MEDICARE ALLOWABLE CHARGES.
("SUPPLEMENTAL" INSURANCE COVERAGE REFERS TO AN ADDITIONAL INSURANCE POLICY THAT A MEDICARE PATIENT MIGHT CARRY TO COVER THESE CHARGES.)

Report on the Accreditation Process

AMA COUNCIL ON MEDICAL EDUCATION

The American Medical Association (AMA) has participated in the accreditation of educational programs since the first publication of an "ideal standard" for undergraduate medical education in 1905. This report is to inform the House of Delegates of the current status of accreditation activities in undergraduate, graduate, and continuing medical education.

Accreditation is a process by which an academic program or institution voluntarily seeks recognition by an accrediting agency. The accrediting agency establishes valid standards, or *Essentials*, necessary for the basic quality of an academic program or institution. When requested, the accrediting agency evaluates the program or institution and, if there is substantial compliance with the *Essentials*, grants accreditation for a specified number of years.

Accreditation as applied to medical education serves several purposes. It encourages improvement in the quality of each level of medical education. Its fundamental purpose is to assure participants in an educational endeavor that the program or institution has complied with basic standards. The sponsor of the educational activity and the sponsor's public or private supporters are assured that their resources have been appropriately used.

The accreditation activities in which the AMA participates are widely recognized as significant measures of the quality of educational activities. The federal government recognizes accreditation by the Liaison Committee on Medical Education (LCME) for its several funding programs, including student aid. State governments recognize the graduates of accredited programs of medical education leading to the MD degree as having met one qualification for a medical license.

The satisfactory completion of at least one year of accredited graduate medical education is one requirement for licensure in almost every licensing jurisdiction. Continuing medical education, if required for the renewal of a license, must usually be obtained from an accredited institution or organization.

Medical organizations, medical specialty boards, hospital medical staffs, and the general public may consider the accreditation status of a physician's education to be a significant qualification.

Accreditation in medicine is properly used to evaluate and improve medical education. It is inappropriate to use accreditation for any other purpose that may compromise its credibility. In this instance, the opinion of the AMA Council on Ethical and Judicial Affairs should be noted.[1] The term *accreditation* is defined as follows:

> Physicians who engage in activities that involve the accreditation, approval or certification of institutions, facilities and programs that provide patient care or medical education or certify the attainment of specialized professional competence have the ethical responsibility to apply standards that are relevant, fair, reasonable and nondiscriminatory. The accreditation of institutions and facilities that provide patient care should be based upon standards that focus upon the quality of patient care achieved. Standards used in the accreditation of patient care and medical education, or the certification of specialized professional attainment should not be adopted or used as a means of economic regulation.

Undergraduate Medical Education

Since 1942, the Council on Medical Education of the AMA and the Executive Council of the Association of American Medical Colleges (AAMC) have sponsored the LCME. The LCME is recognized by each licensing jurisdiction in the United States and presently accredits 127 schools of medicine. By invitation, the LCME participates in the accreditation of 16 programs in Canada so that the United States and Canada have a common standard for medical education leading to the MD degree.

The LCME consists of six individuals appointed by each of its sponsoring organizations. Each organization appoints a student without vote. The Secretary of Health and Human Services appoints a federal representative who does not vote. The LCME appoints two public members who are not engaged in either the practice or the teaching of medicine.

Recognizing the relationship of the LCME with the organization that accredits medical schools in Canada, a designee of the Committee on Accreditation of Canadian Medical Schools is a voting member of the LCME. A member designated by the LCME has a similar role in

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From the Council on Medical Education, American Medical Association, Chicago.

Report B of the Council on Medical Education, adopted by the House of Delegates of the American Medical Association at the 1987 Annual Meeting.

Reprint requests to Council on Medical Education, American Medical Association, 535 N Dearborn St, Chicago, IL 60610 (Richard L. Egan, M.D.).

the activities of the Committee on Accreditation of Canadian Medical Schools. On an annual basis, the chairmanship of the LCME alternates between designees of the AAMC and the AMA. The secretary of the LCME is appointed on alternate years by the AAMC and the AMA.

The Standards for Accreditation of Medical Education Programs Leading to the MD Degree have been carefully studied and approved by both sponsoring organizations. The approval on the part of the AMA was given by the Council on Medical Education, in accordance with the authority delegated by the House of Delegates, after a publicized hearing.

The LCME recently has conducted a self-study that has reviewed its standards and procedures in accordance with its stated mission to not only recognize a basic standard of quality, but to work for the continued improvement of medical education leading to the MD degree.

The Council on Medical Education, as a parent of the LCME, will continue to study and develop appropriate recommendations regarding present and potential problem areas in the conduct of undergraduate medical education, in particular the declining inpatient population, the financing of medical education, and the increasing need for, but difficulty of, teaching in the ambulatory setting.

Graduate Medical Education

The Residency Review Committee (RRC) system was developed shortly before and after World War II and has progressed to a group of 24 RRCs. Each committee includes members appointed by the AMA as well as an equal number appointed by the corresponding recognized medical specialty board. All but five of the RRCs also have equal sponsorship by a specialty society that has been recognized for this purpose by both the speciality board and the Council on Medical Education.

In 1972, the AMA participated with the AAMC, the American Hospital Association, the American Board of Medical Specialties, and the Council of Medical Specialty Societies to establish the Liaison Committee on Graduate Medical Education. This body was formed to accredit residency programs on recommendation by the RRCs. In 1981, the Liaison Committee on Graduate Medical Education was superceded by the Accreditation Council for Graduate Medical Education (ACGME).

Each of the five sponsoring organizations appoints four representatives who, with a resident member, a public member, and a federal representative, constitute the ACGME. The chairmanship of this group is rotated among the representatives of the five sponsoring organizations. By agreement among the sponsors, the AMA provides staff services to both the ACGME and each RRC. Any one of the sponsors may declare an action of the ACGME to be a policy issue, which then requires an affirmative action by each sponsor to sustain the policy decision.

The ACGME adopts General Requirements applicable to the evaluation of all residency programs. Each RRC initiates changes in its Special Requirements. The sponsors of each RRC carefully review proposed changes in the Special Requirements and submit comments back to the RRC. These comments, together with the recommendations of the RRC regarding Special Requirements, are submitted to the ACGME for approval.

The Council on Medical Education, acting on the carefully studied advice of the Graduate Medical Education Advisory Committee, comments on each proposed change in the standards by which residency programs are accredited.

The ACGME has delegated authority for accreditation decisions to each of the RRCs. By means of a monitoring committee, the ACGME periodically reviews the activities of each RRC to ensure that the RRC operates in a reasonable manner, applying standards with objectivity and equity.

The Council on Medical Education carefully reviews the minutes of the ACGME and provides advice to the AMA appointees to the ACGME. The Council on Medical Education also provides an orientation for new AMA appointees to an RRC.

A particular concern is the future financing of graduate medical education. Accreditation activities have increased significantly in recent years and will increase in the near future as RRCs in internal medicine, pediatrics, and orthopedic surgery accredit programs that may qualify the resident for certificates of added or special qualifications. These residency training programs, formerly termed *fellowships,* were not previously included in the accreditation process. Another trend would extend the length of some residency training programs. The Council recognizes the increasing complexity of the scientific basis of practice, but has questioned the rationale for additional periods of graduate medical education.

Continuing Medical Education

The Council initiated the accreditation of providers of continuing medical education, with the permission of the House of Delegates, on a trial basis in 1962. With the help of its Continuing Medical Education Advisory Committee, the Council continued to accredit in this field until the Liaison Committee for Continuing Medical Education was formed in 1977.

A reorganization in 1981 resulted in the formation of the current Accreditation Council for Continuing Medical Education (ACCME). It consists of three appointees from each of the following organizations: the AMA, the AAMC, the American Hospital Association, the American Board of Medical Specialties, and the Council of Medical Specialty Societies and one appointee from the Association for Hospital Medical Education and one from the Federation of State Medical Boards. The ACCME develops standards and applies these standards to accredit, on a national basis, sponsors of continuing medical education that are in compliance with these standards.

Consistent with AMA policy, state medical societies are recognized to accredit organizations that provide continuing medical education within the boundaries of their state. A mechanism has been established to review this activity of state medical societies by a committee of the ACCME that reviews and approves accreditation programs on a periodic basis.

Any one of the sponsors may declare an action of the ACCME to be a policy issue, which then requires an affirmative action by each of the sponsoring organizations for adoption of the policy.

Guidelines have been developed to accompany the Essentials for the Accreditation of Sponsors of Continuing Medical Education. Both of these statements have been approved by each of the sponsoring organizations.

The ACCME has a committee consisting of the appointees of each sponsor. This committee reviews applications for accreditation or reaccreditation and recommends action to the ACCME. The ACCME then decides the accreditation status of the organization for a specified period of time.

The ACCME does not define the credits that an accredited provider of continuing medical education may award to participating physicians. The AMA defines the requirements for the Physician's Recognition Award. Other medical organizations may specify the continuing medical education requirements for their members.

The Council on Medical Education, with the assistance of the Continuing Medical Education Advisory Committee, monitors the minutes of the ACCME and provides advice to the AMA appointees to this body.

Summary

The continuing participation of the AMA in the accreditation of medical education is consistent with the responsibility of the medical profession for the quality of each level of medical education. The Council on Medical Education will continue to monitor and recomend improvements in an essentially sound and effective accreditation system. The ultimate purpose of accreditation is to improve the quality of medical care through education, research, and service. The Council will report further developments as indicated.

The Council on Medical Education recommends that the AMA continue its participation in the accreditation of each level of medical education.

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Members of the Council on Medical Education (June 1987) include William E. Jacott, MD, Chairman; E. James Potchen, MD, Vice Chairman; John E. Albers, MD; John A. Baker; J. Lee Dockery, MD; Karolyn J. Kramer, MD; George T. Lukemeyer, MD; Sam A. Nixon, MD; William J. Reals, MD; Frank A. Riddick, Jr, MD; F. Douglas Scutchfield, MD; Charles D. Sherman, Jr, MD; and Richard L. Egan, MD, Secretary.

IN MEMORIAM

BALDWIN, W. HOWARD, New York College, 1941. Dr. Baldwin was a general practitioner in the Hartford County areas since 1952. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 20 January 1988 at the age of 79.

CARANGELO, EDWARD V., Tufts, 1931. Dr. Carangelo was a general practitioner in the New Haven area since 1933. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 13 February 1988 at the age of 82.

EIMAS, AARON, Tufts, 1930. Dr. Eimas was a pediatrician in the Fairfield County area since 1932. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 2 February 1988 at the age of 82.

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View from the Hill

JAMES E. BRYAN

Two years ago, in an address to the National Coalition Leadership Conference, Walter McClure, president of the Center for Policy Studies in Minneapolis and a nationally recognized intellectual pioneer of the HMO movement, warned that America's health care system was "balanced on a knife edge" of crisis. The power to decide medicine's future, McClure warned, has passed from the providers (physicians) to the purchasers (i.e., industrial and business leaders or the government). These purchasers have overcome physicians as the dominant force in a quartet of major players comprising (1) the physician; (2) the consumer (patient); (3) the third party who transfers funds, and (4) the purchaser who supplies funds.

McClure's insight has been amply confirmed by recent developments in health care coalitions. As reported in the October 1987 *View,* the National Capital Health Care Coalition, under overwhelming pressure by its industry members, voted to strip representatives of physicians, nurses, hospitals, insurers and labor of voting rights in coalition affairs. This effectively arrogates to industrial and business representatives the power not only to determine the policies and programs of the coalition, but to speak for the professions and institutions that provide health services, and for the general public.

The professions, providers and public representatives were generously granted an "advisory" role in the Washington Coalition. Similar industry initiatives are planned or have been accomplished in many coalition centers. Ironically, the concept of health coalitions was originated and fostered on a national scale by the American Medical Association, the American Hospital Association and other professional organizations, primarily to bring together all community groups concerned with health care problems.

Industry and government (e.g., Medicare, Medicaid, the Veterans Administration) have gained overwhelming hegemony in the medical economy, and their power to shape the future of medical practice has been decisively enhanced, as McClure observed, by the overabundance of physicians. While it is generally conceded that an efficient high-quality medical care system requires approximately 1.5 to 1.7 physicians and 2.5 to 2.8 hospital beds per thousand Americans, we now have 2.2 physicians and 4.5 beds, and the physician ratios are expected to grow to 2.4 by 1990 and 2.6 by the year 2000—producing a 20 to 30% oversupply of doctors.

In the face of strenuous efforts among industrialists to cut back their employee medical care programs, and with equal stringencies inflicted on federal and state health care budgets, it is clearly ever more dubious that the glut of physicians can support itself and even more ominously predictable that critical decisions will be made by price-minded purchasers. These purchasers have little care for such niceties as the need to finance the uninsured, to sustain the institutional requirements of medical education and biomedical research, or to respect the centrality and confidentiality of the patient-physician relationship.

McClure takes little comfort in Medicare's DRG as a device to control costs, which "moves from a totally disastrous buy-wrong strategy to an only semidisastrous one." Under DRG, the federal organizations now "buy on price rather than on cost"—a scheme that penalizes very ill patients and high-quality physicians. Price controls loom as a likely resort, with some states, as purchasers, already flirting with the device. McClure brings a multiple indictment against the growing glut of physicians.

(1) The glut affects quality by discouraging normal patterns of referral to avoid loss of patients, by diluting the experience and skills of physicians, and by lowering the prospective earnings and quality of new entrants into the profession.

(2) The glut weakens physicians' control of the "house of medicine." Intense price competition corrodes respect and concern for the ethical and traditional values of the profession.

(3) The glut threatens efficiency (i.e., high quality at low cost). Efficient providers earn less per patient but there are fewer patients per physician, leading to less efficient practices or even to neglect of imaginative initiatives.

(4) The glut produces radical changes in the form and function of medical organization, cultivating corporate-dominated closed panels. Physicians and hospitals compete to keep patients in, and doctors out, of their individual corrals of practice.

JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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(5) A system is inevitably controlled by whoever controls the items in short supply. Physicians were the scarce items in the past, so they controlled the enterprise. Now, physicians are in oversupply and the short-supply items are patients and capital. The purchaser, industry or government, controls the patients and dictates to physicians their terms of service. Since physicians are bidding for patients, they are "soft targets" for the purchaser.

If continuing regulation by purchasers is an uncomfortable prospect, I submit that physicians intensify their efforts to halt this evolving pattern. First, physicians should vividly remember—and tactfully remind everyone else—that the physician is dedicated without reservation to the care and counsel and, where needed, the utmost effort to cure and restore the patient to the fullest capacity for life. For this mission, the physician has devoted many years in training and has been the beneficiary of immense social investment in the medical enterprise.

Second, the profession—rather than spending its moral and financial capital in resisting the rising popular demand to bring some order, logic and coherence to the social organization of medical services—should decisively and conspicuously assume public leadership in rendering the supreme service to American society that medicine is uniquely qualified to render: to design a national medical care and health promotion program, and to invest medicine's corporate resources and prestige in a total national effort to realize that program.

AROUND THE STATE

Dr. Walker Honored

At its Seventh Biennial Conference in Montreal, the Northeast Canadian/American Health Council inaugurated the James E.C. Walker, MD Lecture in honor of Dr. Walker.

Dr. Walker retired as the Co-Chair (U.S.) of the council in 1987 after having been a member of the council since its inception in 1974, and after serving as US Co-Chair for ten years.

To honor his leadership, the council has designated a "Walker Lecture" to be given at every biennial conference held in the US.

Dr. Walker was Professor and Head of the Department of Community Medicine and Health Care at the University of Connecticut School of Medicine in Farmington from 1966 through 1986. He is presently professor of medicine and Associate Director of the Travelers Center on Aging of the University of Connecticut.

Dr. Turpin H. Rose, President of the Fairfield County Medical Association, wrote this brief editorial comment for the association's *News Capsule,* February 1988.

The Final Enemy

To live is to live in resistance to death.
—William Stringfellow

George, an old friend, died a few weeks ago in New York City. I'd seen him the day before; as usual, with a twinkle in his eye, he told a good story or two with his characteristically self-deprecating humor, sharp of mind with the fulsome wisdom of a rich 81 years. A classic "Old New Yorker," with traditional ties to law firm, church, charities and club, he nonetheless had no use for nostalgia; I never heard him lament that things ain't what they used to be (doctors take note!). Never one to waste time or money on private transportation, he died suddenly on the subway at a stop near Bellevue; if an unpleasant thing must be done, do it as expeditiously as possible, he would have said.

A life to be admired a death to be envied. One might opt for a nineteenth-century deathbed scene, surrounded by family and friends, dispensing blessings (or curses, depending on one's style and disposition), but at least a departure with body and mind still connected. Well do we know that such is often not the case. Congress labors over legislation to deal with catastrophic illness, but the bigger problem is catastrophic survival-months in an extended care facility with the inevitable depletion of savings, and given enough time, Title XIX for all but the very wealthy. Add to this the fact that 10% of all Medicare payments are spent on the last month of life, and one must ask if this is the way is has to be.

Well, yes and no. Yes, because no one comes with a certificate saying "only one month to go" or "no longer of use to the state," (but don't trust the government forever on this one). Yes, because almost every advance in medicine has come from resisting the inevitable, providing not just more years lived but more enjoyed. Yes, because a life prolonged can provide organs that others might live.

But also no. The hospice movement over the past several years has said a creative no, and with the deepening AIDS crisis, will play an ever expanding role. Physicians must, and surely will, learn to let go, when to relinquish to art what science can no longer accomplish. The "go broke then go on welfare" pattern of nursing home funding can be changed through a combination of private and federal means. And medical care can be more directed to preserving function over longevity where a choice has to be made.

Meanwhile we face the final enemy on behalf of others until our own turn comes. That's called living.

Kenneth Dale Beernink: Three Poems

Anniversaries
for MRB

Tell me a tale of Time;
Of a year or a day or a time
Too brief to split; atomic
Time; a single click
On our old-fashioned carriage clock
That runs too fast, or the time
To slowly take a walk,
Or teach our child to talk,
To reach maturity,
Or to make the Cantos rhyme.
Tell me of the time
You talked of Time to me.

Tell me the tale of Time
When you and Love and I
Whispered of years. And why
Did we whisper of years? To lie,
We three, in the narrow bed
Of Time with room only
For two—Procrustean bed—
Leaving cold and lonely
You, or me, or Love,
Or truncating all three to conform
To his ephemeral norm.
Tell me how Time treats Love.

Then why did we whisper of years
Or of days, and why did we count
The moons and number the tears
And trace Time's template with fears
Foreign to just we two?
And why did we think the amount,
Or the sum, or the old, or the new,
The have done, the might, the will do?
We are no tangle of tense.
We've no time for Time, there's no sense
In our years. The old carriage-clock
Runs too fast; our child's too slow to talk.

The Poets Said He'd
Come Mysteriously

The poets said he'd come mysteriously—
pale, hooded, smirking,
quietly floating in a cold wind.
They said he'd come sneaking through the shadows
  one day
when I was ripe and heavy with my living,
when I was nodding by the fire
counting honors, securities and grandchildren
having nothing left to do.
The poets said he'd come then
secretly, invisibly,
to lay his cold bony finger on my shoulder
and whisper reassuringly,
"We'll go now."

But today while I lay loving my bride in the spring
  greenery,
still shy of my young manhood and full of the child's
  blood
I suddenly heard great coughing and spitting and
  cursing
and up he strode in proud boots of creaking leather
whistling off key and snapping his stubby fingers.
He slapped me hard on the back with his hot sticky
  hand,
belched in my face and croaked through a toothless
  smile,
"Don't let me interrupt nothin, we won't go just yet.
Go right ahead with what you're doin there,
just like I never come by."

Feline Sagacity

A feline face looked in on me
As I lay waking on my back
In contemplation. Through a crack
Of eye it viewed my tragedy.

It filled my window and was gone
The way it came. Its inverse image
Stayed a bit to look upon
My prostrate form as if some message

It had come to tell: that I
Should live in peace and happiness,
That I should love, and should quiesce
At death's approach without a sigh.

It must have seen my tear wet cheek
And known at once these all were mine
Save calmly facing life's decline.
Its leaving meant as no critique;
No comfort could it have to speak.

Kenneth Dale Beernink was a most unusual man. Valedictorian of his high school class, a Phi Beta Kappa and AΩA graduate of Stanford, a jazz cornet player, Dale did a medical residency at Yale, immunology research at the Pasteur Institute and was an early advocate of Physicians for Social Responsibility. Sometime before he died of chronic myelogenous leukemia at the age of 31 he squeezed in a four year marriage, a child, and a painfully slim, wonderfully poignant volume of poems entitled *Ward Rounds.*[1] The 23 poems therein describe, like a medical *Spoon River Anthology,* a microcosm of medicine that ranges from gout to suicide to failure-to-thrive. Amidst the palpable empathy is humor (the patient with dementia is named P. Fulton Dimmit) and pathos (the patient with traumatic decortication waits, "patient as a pupa," for a diaper change).

These previously unpublished poems were written during Dr. Beernink's illness. They reflect an intelligent, poetic encounter with the fact of dying and offer a striking comparison to the corresponding encounters in prose in *When Doctors Get Sick*, reviewed in this issue of *Connecticut Medicine.* Dr. Kenneth Dale Beernink is one of those startingly memorable and tragic examples of Menander's 2000 year old truism: "ὃν οἱ θεοὶ φιλοῦσιν ἀποθνήσκει νέος" (He whom the Gods love, dies young). Along with the editor of *Connecticut Medicine*, I would like to thank Mrs. Margaret Rose Beernink for allowing us to print these poems. They are a valuable addition to his legacy.

Richard M. Ratzan, M.D.

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Editorials

Guest Editorial

Mandatory Assignment: Stealing Time and Quality

The prospect of mandatory Medicare assignment presents me with a great personal dilemma as a conscientious physician. By nature, I must do well whatever I do. I went back to school to become a physician after 10 years as a laboratory scientist because I was interested in people and their problems. I am interested in each of my patients as an individual human being. I listen to them carefully. I give them time to grope for, and find, what they *really* want to say.

I ask probing questions and wait patiently for the answers. Or draw them out. I don't cut my patients off in mid-sentence. I know that what they have to tell is important. I listen. I get to know them. It takes time.

But it is productive time. It is often when my patients are relaxed and have worked their way through to what they really mean that I get the clue that leads me to a correct diagnosis.

I try to educate my patients. I explain their illnesses to them in words they can understand. I tell them why it is important to do what I recommend or take prescribed medications. I tell them what side effects could occur and how to recognize them.

If patients are reluctant to do something that I know they should do, I explain the reasons why they should do so and try to talk them into it. It takes time. But it's time well spent. Only yesterday, I spent 15 minutes urging, cajoling and convincing a Medicare patient that she should have a mammogram. For years, she had refused. This time, she consented. The mammogram showed an occult carcinoma. Without the mammogram, the cancer might have gone undetected until it was too late for effective treatment. This one was caught at an early stage. There is a chance of cure. This woman's life may be prolonged, and her remaining life will probably be more vigorous and free of pain than might otherwise have been the case.

Making the Time

It takes time to be a good doctor. I am usually thinking about some patient's problems as I drink my coffee at 5:30 a.m. I normally see my last patient about 6:00 p.m., deal with telephone calls and paperwork (mostly Medicare-related) and finally leave the office about 8:00 p.m.

I am usually on call 24 hours a day. I am often awakened to attend a patient in the hospital emergency room in the middle of the night; on the average, that takes about three hours. I may or may not get back to bed. Whatever the case, hospital and office patients, already scheduled, must be seen come the normal "working day." Twice each month, I have the weekend afternoons "free" after morning hospital rounds; but at least one afternoon on each of those weekends is usually spent in the office—catching up on Medicare paperwork. One weekend per month, I am on call for my patients and for the patients of three other doctors at all hours of the day. I am totally free one weekend per month—my only uninterrupted time for family activities and personal chores.

Being a good doctor takes time. Time to develop empathy. Time for analysis and concentration. My ability to serve my patients well depends upon my ability to spend time with them. And to have time to think critically about their problems.

My dilemma is that under mandatory Medicare assignment I—and, most important, my patients—will lose the luxury of time.

The Mathematics of Care

Medicare will pay me $50 for doing a thorough medical examination, no more. Normally my exam takes about an hour, not because I cannot work faster—I can—but because that is how long it takes me to review carefully with an elderly person all of his or her medications, recent medical complaints or problems, review the systems of the body that might be troubling the person, discuss the need for immunizations, problems with diet and weight control, drug and alcohol use/abuse, insomnia and living situations that adversely affect health. This takes at least an hour, sometimes a great deal more, since Medicare patients often have multiple complex problems.

Yet, my office overhead averages about $60 per hour, approximately $65,000 annually (which is near the national average for internists). The office isn't fancy—just decent enough for patients to feel comfortable there and safe enough to satisfy my husband. My helpers, both mothers who work part-time, are not overpaid.

Most of my patients are elderly and therefore on Medicare. If I am forced to take Medicare assignment on all of them, I will have to make difficult choices: I can quit medicine. Or I can continue operating as I do now and be forced out of business by economic reality. Or I can see more patients and reduce the amount of time spent with each.

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Cause and Effect

Reducing the time spent with patients means reducing the quality of care. It means being brusque and hurried and moving patients along before they can say what they really want to say—and missing important clues to their illnesses as a result. It means no cajoling and urging; if I tell a woman that she needs a baseline mammogram and she refuses, I will just have to make a note on her record (for medicolegal reasons) and move along. No time for explanations. No time for education.

My dilemma is that I don't want to practice assembly-line medicine. And I don't know whether I can.

Annemarie S. Welch, M.D.

Dr. Welch is in the private practice of internal medicine in New Britain, CT.

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Male Abortion Counseling

Elsewhere in this issue of *Connecticut Medicine* a ministerial counselor describes a West Hartford Planned Parenthood Program designed to help men who have accompanied their partner to an abortion clinic on the day of the procedure. It is clear that the men are receptive to a counseling approach when offered by a skilled and experienced therapist. It also appears that the program may prevent future abortions.

The men need information—about the procedure, about contraception and about what to expect afterwards. Men are usually kept ignorant about what happens to women and this ignorance is but one source of male feelings of rejection, frustration, anger, and the desire to flee a threatening physical and emotional situation. Crisis intervention of the sort described has to be helpful. In West Hartford the information is provided by a counselor health educator. A minimum offering for any program would be a booklet, an audio, or videotape describing what the women are going through and how future unwanted pregnancy could be prevented. The men don't want to flee.

In West Hartford it has been found that men need help in talking about their feelings of guilt, rejection, anger, and depression. An experienced and mature professional is needed for such a process. Too often, even when efforts are made to engage the man in counseling, the service is provided by peers or by interested and concerned volunteers and health professionals who are limited by lack of experience in psychotherapy and who function without supervision. We should do better than that because the stakes are so high and the potential gains of effective therapeutic intervention are so great. Unfortunately, the routine training of most health care professionals in our country provides little opportunity to gain a combination of skills in women's health care and psychotherapy. Postgraduate programs need to be developed to give psychotherapy training and expertise to non-psychotherapist health care providers. In Sweden, there now exists such a model, and it has proved useful in a wide variety of medical settings and, in particular, in programs offering health care to women.

Therapeutic intervention at the time of an abortion affords an opportunity to enhance communication of feelings between a couple. Abortion is frequently a negative turning point in a relationship leaving scars which can undermine the future of the couple either together or as individuals. Repeat pregnancy is but one manifestation of failure to deal with needs at the time of the first pregnancy. For the moment, the West Hartford program has not had the resources to expand their program to enable continuing follow-up counseling. For almost twenty years, at Yale, the Sex Counseling Service has been able to work with couples, help them recover from the shock and feelings of their abortion experience and go on with the development of their lives.

Abortion and its aftermath, the role of male partners, and the need for male as well as female counseling in primary and secondary prevention are modern-day challenges calling for the most effective of intervention models. The West Hartford program is worth noting.

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The President's Page

Pap Smears and Fee Schedules

As many of you may know, *The Wall Street Journal* not long ago ran several articles on Pap smears. The underlying theme was that there were many doctors and nurses, and maybe others, doing the tests who did not know how to do them properly and that there were many laboratories that did not interpret the submitted tests properly—and therefore, this *screening test was resulting in many women not knowing that they had a malignancy until it was far advanced.*

Now, I'd be the first to grant that there may be some doctors out there who do not know how to do Pap screens properly. In all fairness, they were probably never trained as to how to obtain proper specimens—especially since present training programs usually have no such ob-gyn training for house officers. And I'd also be the first to recognize that there may be some laboratories out there which, conforming to national priorities to be cost conscious and competitive, were offering their own versions of "sink-testing" in order to have a good "bottom line." As I indicated in a previous column, the allegations were proferred mainly by a spokesman of the American College of Obstetrics and Gynecology—a highly respected organization that would seem to have the most to gain if only its members were to be allowed to do such tests.

Reading those initial articles made me wonder when such information would result in "the inner Beltway" taking up the issue. Sure enough! Early in March, the same "Journal" came up with the followup: US AID URGES TESTS FOR INSPECTORS OF PAP SMEARS. Representative John D. Dingell (D.,Mich.) had his House Energy and Commerce Committee's Oversight and Investigations Subcommittee get on the ball and paraded multiple witnesses before it.

Dr. William L. Roper, administrator of the Health Care Financing Administration told the subcommittee that doctors often choose laboratories for all types of medical tests based on availability of kickbacks rather than quality of service. Given Dr. Roper's position, this statement was assumed to be accurate. It is no wonder that patients are asking gynecologists, or other Pap screeners, what they are receiving from the lab for sending smears to them. Never fear, Dr. Roper will soon have regulations.

The quality of care that federal Medicare beneficiaries receive was reported to be of concern to the inspector general of the department that was seeing a nationwide proliferation of allegations of kickbacks, fraud, and poor testing by laboratories—a proliferation that he felt would be devastating. The key word is "allegations." At least the attorney general of Massachusetts did not allege, but did report finding numerous instances of physicians accepting kickbacks from laboratories for channelling business to them.

It is sad that apparently significant numbers of our colleagues are engaged in this form of revenue production. What would be refreshing, for a change, would be an open and frank discussion of the problem and the pursuit of solutions that would result in fair *local* fee structures to benefit everyone especially our patients.

In a free enterprise system with laboratories vying for business, it is hard to criticize the "deals" they offer to maintain or promote a level of service in order to stay in business. Physicians, on the other hand, are expected to accept and garner only fees for service—fees which have been frozen and debased by the government with little regard for cost of living or patient needs. The laboratory services and fees situation is a knotty problem which deserves open and serious study by all concerned—*not* unsubstantiated claims and epithets designed to further denigrate the physician or laboratory.

The Massachusetts attorney general indicated that he had evidence that there were laboratories across the nation that charged two sets of prices, one for government beneficiaries and one for other customers. Besides questioning his obtaining evidence outside the borders of Massachusetts, one wonders why he, or the Committee for that matter, is concerned about the two-tiered fee system. After all, Medicare has a two-tiered fee system for the physicians of America.

The original Medicare law of 1966 gave the American public equal access to medical care by reimbursing all physicians equally. Now, the Congress has seen fit to do the same thing as the laboratories reportedly are doing. It has established two sets of prices for the physicians of America to accept: one, a lesser price, for those who will not accept what they deem fair; the other, a higher price, for those who will accept what they deem fair. It sounds as if we are back to the price controls that President Nixon imposed some 17 years ago on the American people. However, this time it is only for physicians' prices, so the general public is not concerned.

As a grand finale, one member of Congress wants to blame the whole laboratory industry on Mr. Reagan!

James P. Orphanos, M.D.
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Reflections on Medicine

A Novel Perspective

ROBERT U. MASSEY, M.D.

Few students come to medical school with firm plans for a career in biomedical research; most are headed for clinical medicine, often, however, imagining themselves doing a little teaching and research "on the side." Only those who have already worked in laboratories as graduates or undergraduates have any idea of research as a career; in an elective seminar during their second year we talk with students about biomedical science and academic medicine.

They interview some willing biomedical scientists on the faculty, asking about their careers and why they chose them. They learn something of the ethics of research, the issues raised by research with human subjects, the use of animals in biomedical research, the imperative for truth telling in science, and the serious consequences of scientific fraud. They hear again the story of the remarkable advances of modern medicine and its dependency on the men and women who work in research laboratories all over the world. They catch some of the enthusiasm.

They also learn that, while research involves the quest for objective truth, those who are questing are stuck firmly in their time and place, unable to move far from the intellectual spirit of their generation. For examples, they learn something about four men: Harvey, Bernard, Pasteur, and Koch.

The last three are recognizably men of an old-fashioned world but one which we, and they, all can recognize from old family pictures, old newspapers, old houses that are still lived in, and Victorian novels that are still read. William Harvey on the other hand takes some explaining. It is misleading to say that he was really a modern physiologist dressed in an Elizabethan or Jacobean costume. If he could choose, I suspect he would place himself closer to Claudius Galen, whom he in part refuted, than he would to Louis Katz, with whom he is compared in this seminar. We are all closer to our parents and grandparents than our grandchildren could ever imagine.

To understand Harvey we have to start with the Greeks: the four humors, the four elements, the four qualities were givens in his science. So were the natural spirits, the vital spirits, the animal spirits, and innate heat. We might not understand but should mention that Harvey's concept of health and disease depended not only upon a balance of the humors, but also upon the influence of the naturals, the non-naturals, and the contra-naturals. The medicine and physiology of his time were caught up in disputes over Paracelsianism, iatromechanism, and iatrochemistry; in philosophy, which profoundly affected seventeenth-century medicine, matter-of-fact Aristotelianism was either mixed up with or in conflict with airy Neoplatonism.

It is simple enough to draw diagrams showing the physiology of the heart and blood vessels according to Galen and to contrast this second-century scheme with Harvey's circulation; it is harder to see this in Harvey's terms, even after reading *De Motu Cordis*, with its brief straightforward account in Chapter IX where he cinches his argument by quantifying the cardiac output. But when we turn back a few pages we know we are in a different time and place:

> So the heart is the beginning of life, the Sun of the Microcosm, as proportionably the Sun deserves to be call'd the heart of the world, by whose vertue and pulsation, the blood is mov'd, perfected, made vegetable, and is defended from corruption and mattering; and this familiar household-god doth his duty to the whole body, by nourishing, cherishing, and vegetating, being the foundation of life and author of all.[1]

The simple idea of objective truth turns out to be not so simple after all; it is a worthwhile lesson for both teachers and students.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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The Duty to Treat AIDS Patients: Ethical and Legal Perspectives

JOSEPH M. HEALEY, J.D.

Last month's column described the legal framework for evaluating a doctor's duty to treat patients who are HIV positive, have ARC, or have AIDS. There is no general legal duty for doctors to enter into a relationship with a specific patient except under the unusual circumstances described in that column. However, once a relationship has begun, the doctor has a legal obligation to continue to provide care and to avoid abandonment of the patient. In the AIDS context, a doctor may not have a legal duty to accept a new patient who is HIV positive, has ARC, or has AIDS. However, a doctor may not abandon a patient in an existing relationship if the patient's status is discovered during an existing doctor-patient relationship. The absence of a general legal duty has shifted attention from legal sources to ethical sources. Recently the Board of Trustees of the American Medical Association and the Council on Ethical and Judicial Affairs of the American Medical Association have taken steps to clarify the professional ethical responsibilities of physicians in caring for patients with AIDS. These steps should be of interest to all physicians.

At the 1987 Annual Meeting of the American Medical Association, the House of Delegates adopted Report YY of the Board of Trustees.[1] This report affirmed the right of AIDS patients to be free from discrimination and to have access to medical service characterized by compassion and respect for human dignity. At the 1987 Interim Meeting, the House of Delegates filed a report which described the physician's duty in the following language.

> A physician may not ethically refuse to treat a patient whose condition is within the physician's current realm of competence solely beause the patient is seropositive. The tradition of the AMA, since its organization in 1847, is that "when an epidemic prevails, a physician must continue his labors without regard to the risk to his own health." (See Principles of Medical Ethics, 1847, 1903, 1912, 1947, 1955.) That tradition must be maintained. A person who is afflicted with AIDS needs competent, compassionate treatment. Neither those who have the disease nor those who have been infected with the virus should be subjected to discrimination based on fear or prejudice, least of all by members of the health care community. Physicians should respond to the best of their abilities in cases of emergency where first-aid treatment is essential, and physicians should not abandon patients whose care they have undertaken. (See Section 8.10 of *Current Opinions of the Council on Ethical and Judicial Affairs of the American Medical Association, 1986.)*
>
> Principle VI of the 1980 Principles of Medical Ethics states: "A physician shall in the provision of appropriate patient care, except in emergencies, be free to choose whom to serve, with whom to associate and the environment in which to provide medical services." The Council has always interpreted this principle as not supporting illegal or invidious discrimination. (See Section 9.11 of *Current Opinions, 1986.)* Thus, it is the view of the Council that Principle VI does not permit categorical discrimination against a patient based solely on his or her seropositivity. A physician who is not able to provide the services required by persons with AIDS should make an appropriate referral to those physicians or facilities that are equipped to provide such services.[2]

One interesting effect of the delineation of an ethical obligation to serve may be its expansion into a legal obligation. In many states, unethical behavior can be a basis for licensure sanctions including fines and suspension or removal of a doctor's license to practice. Further discussion of this issue will conclude in next month's column.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

REFERENCES

1. Board of Trustees, American Medical Association: Prevention and control of Acquired Immunodeficiency Syndrome: An interim report. BOARD OF TRUSTEES REPORT. *JAMA* 1987;258:2097-2103.
2. Council on Ethical and Judicial Affairs, American Medical Association: Ethical issues involved in the growing AIDS crisis. COUNCIL REPORT. *JAMA* 1988;259:1360-1361.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

THE RAP PROBLEM

To the Editor: I wish to correct an erroneous statement made by an anonymous state AMA delegate member in his/her report of the 1987 AMA Annual Meeting which was published in *Connecticut Medicine* January 1988, p. 65, and which concerns an update on the RAP (Radiologist, Anesthesiologist, Pathologist) problem. The member wrote: "Not withstanding the fact that relatively few doctors of this group have chosen to help the AMA by belonging, the AMA legislative effort worked on their behalf so as to avoid mandatory DRG status for these doctors, (as they did for all of us earlier)."

As a pathologist I take issue with this statement. Pathologists have a long history of being actively involved in supporting the AMA. In fact pathologists are disproportionately represented on AMA councils and legislative bodies. According to the AMA headquarters in Washington, DC, currently 2.7% of all physicians belonging to the AMA are pathologists and this percentage is higher than most specialties.

Pointless and inflammatory attacks on colleagues will not foster unity in this state or the national level.

A correction is in order.

Daniel C. Niejadlik, M.D.
Pathologist,
Middlesex Memorial Hospital
Middletown, CT

To the Editor: In the *Connecticut Medicine,* January 1988 issue, page 65, there is an anonymous report of the 1987 annual meeting of the AMA House of Delegates. In the report, as an update on the RAP's problem, the author writes: "Not withstanding the fact that relatively few doctors of this group have chosen to help the AMA by belonging, the AMA legislative effort worked on their behalf so as to avoid mandatory DRG status for these doctors, (as they did for all of us earlier)."

As a pathologist and a member of the AMA, I would like to express my dissatisfaction with this statement. Whereas some regions of the country have low pathologist membership in the AMA, the national percentage of AMA member pathologists is greater than several other medical and surgical specialties. I personally feel that the private practice of pathology has long supported the AMA and certainly that the College of American Pathologists has worked long and hard in concert with the AMA to defeat the RAP's proposal.

Such self-aggrandizing statement as that made in this recent issue will only serve to further separate and alienate the various groups of physicians precisely at a time when we should be coming together in a unified effort.

A clarification is in order.

Dennis G. O'Neill, M.D.
Chairman, Department of Pathology,
Manchester Memorial Hospital
Manchester, CT
Secretary-Treasurer,
Connecticut Society of Pathologists

The above letters were referred to the author of the article in question who offers the following reply:

To the Editor: In answer to letters from Drs. Daniel C. Niejadlik and Dennis G. O'Neill regarding the RAP problem in my AMA report of the 1987 annual meeting, I have simply tried to report the sense of the meeting and the observations of our colleagues. As you may know, the AMA has developed an "Outreach Program" to exhort more physicians to join. Happily, this has worked out well with recent significant increases in membership. As a preliminary part of the Outreach Program, the AMA has distributed to appropriate members, the list of non-AMA physicians in their areas. Many physicians have noted the fact that hospital-based physicians seem to have a higher percentage of non-AMA membership. This is particularly true in many academic institutions. Many have reported difficulties in recruiting members from this group when they have made enthusiastic attempts in this direction.

With the development of a Hospital Medical Staff Section, many of us have high hopes that medical areas of interest and concern of the hospital-based physician will be thus met. In any case, the intent of this report is simply to look at areas in which we can hope to bring the message of the importance of AMA membership and thus to encourage physiccians to join their AMA colleagues in these most troublesome times. There was certainly no intent to castigate our loyal and helpful members (such as Dr. Daniel Niejadlik and Dr. Dennis O'Neill). They are quite correct that the pathologist members of the AMA have been in the forefront of many important AMA activities.

Stewart J. Petrie, M.D.
AMA Delegate from Connecticut
Derby, CT

BOOK REVIEW

When Doctors Get Sick

Edited by Harvey Mandell, M.D., The William W. Backus Hospital, Norwich, CT and Howard Spiro, M.D., Yale University School of Medicine, New Haven, CT.
Plenum Medical Book Co., New York and London. 1987.
460 pp. $25.00.

"The frustrating part about sciatica and back pain is that it doesn't hurt very much when you're on your back and lying still. It's just that when you try to walk, breathe, eat, urinate, sit, or any of the other normal functions of daily living, the pain is almost unbearable." This from Sam Sugar, an internist from Illinois about his back pain. Even though I admired Dustin Hoffman for practicing running along the East River with a child under his arms for filming the scene in *Kramer vs. Kramer* when his child gets injured, I did not intentionally throw my back out the day before reviewing this book. However, and this is one of the messages and controversies about this book, it helped. (Reading a book of physicians' first person narratives of their illnesses while ill oneself is so fraught with irony that it's hard to concentrate on the task at hand, ie, reviewing. One is continually comparing emotions, observations, reactions.)

This book is magnificent. Unfortunately, it also provides too much material for comment in a book review that is not also a lengthy essay. Having issued both the verdict and disclaimer at the outset, allow me to list some of its achievements, highlight a few and close with observations each of which merits a separate treatise. Since, as is my practice, I keep notes on the endpapers when reviewing a book and I filled up three pages, I will only hit the most salient issues.

When Doctors Get Sick is, first and foremost, about control. I have listed over 25 examples in my notes. And these are instances wherein the narrator himself or herself uses the word "control." A few will demonstrate what it means to internists, psychiatrists, and surgeons to look at themselves as they might a patient, as the editors put it in their useful epilogue. Several physicians began issuing orders about their care while still on the floor, while climbing onto a cardiac bed, in the ICU, while in shock in the emergency room from near-exsanguination. The expressions of this feeling of loss of control are illuminating: "I found it very difficult to trust anyone with my care" (page 207); "I would not give up control until it could not be avoided" (page 205); "I was still terrified, however, because my body was not getting better and remained out of control" (page 175); "Thus was started a chain of events that I was never able to control" (page 19). Many of the physicians in this volume did not realize that their problem was not in relinquishing control over their health; their downfall was in not relinquishing control of their role as physicians. It seems that Enid Bagnold was right when she observed in her marvelous autobiography that a physician can never go back—he knows too much. Just as conflicts of interest and conflicts of professional and personal moralities confuse physicians, this attempt to reconcile the Aristotelian impossibility (a thing can not be itself and its opposite at the same time) of being simultaneously a physician and a patient significantly interfered with the health, healing, and care of many of these authors. Two physicians (one a gastroenterologist, the other a pathologist) so controlled their diagnostic workups that they performed their own rectal examinations!

Other contributions this book offers are the many masks of denial: the doctor as "bad" patient; lessons for the doctor's doctor ("Is this precisely what I would do for ordinary patients?"—page 210—certainly the test process used by those physicians I've known to be honored with the epithet "doctor's doctor"); lessons for the proper behavior of fellow physicians as friends of a sick doctor; observations about medicine and what I call the medical model (ranging from differences between surgeons and physicians, to medical student clerkships, to the layered workups by "legions of housestaff" who are too many cooks, who "overtest and overtreat"—page 204).

These contributions alone would make *When Doctors Get Sick* an important book. Its real virtue, however, resides in its offering 50 primary sources. For sociologists, historians, humanists of all disciplines, whether it be the study of jargon, professional manners and morals, or the psychology of illness, the name of the game is primary sources. Like *When Doctors Are Patients*, an earlier anthology of physician-narratives of illness, *When Doctors Get Sick* provides unique insights into realms only available in this genre. If the authors of the former volume seem to intellectualize their self-observations of symptoms and signs, like a Dr. Poe or a Dr. Dostoevski or a Dr. Proust, the authors of the latter volume devote most of their energies to emotional angst, interpersonal relations, difficulties with their doctors. Whether this difference, if real, reflects a shift in attitudes of the experience of illness by doctors, a shift in today's healthy doctors who then became sick, a difference in guidance by the editors, or a difference in the times (*When Doctors Are Patients* was published in 1952, a happier time for medicine)—this difference in tone and focus is but one legacy that this collection bequeaths the student of medicine and its practitioners. Like any newly discovered mine, this book awaits prospectors with the right tools, techniques, and questions. Although monographs like Oliver Sacks's *A Leg To Stand On* and William Nolen's *Surgeon Under The Knife* exist, *When Doctors Are Patients* and *When Doctors Get Sick* are unparalleled collections of diverse accounts in shorter form.

Additional insights found only in a book of this sort are the view of medicine from the inside by a knowledgable critic; invaluable first-person descriptions of diseases ranging from anaphylaxis to melanoma by experienced history takers and semioticians of illness; informed descriptions of physicians by those who know the self-serving tricks, the signs of weakness, the unappreciated strengths. Other valuable observations include the patient's world as viewed by a physician: the idiocy of inconsiderate physicians and nurses who follow routines unthinkingly, like early morning hustle and bustle, waking up people with, of all things, singing; the low priority of modesty of patients and their nakedness in a hospital; the self-defensiveness of nurses and physicians; the oft observed superiority of nurses to physicians when it comes to caring. Indeed, one gets the impression that many of these authors are serving as so many (unintentional) invisible double-agents, penetrating medicine like a journalist or racism like a Ralph Ellison.

These and a host of observations, reactions, complaints, betrayed attitudes, and variations in the phenomenology of the illness(es) of physicians await further exploration. How do these self-descriptions stand up to the stark light of others' descriptions of the same events? How do they compare to non physician self-descriptions of illness, so called "pathographies?" How do they compare to fictive accounts like Updike's "From the Journal of a Leper?" Are there, in fact, as some authors ("I was a patient before I was a doctor"—page 359) and the editors suggest, differences between those physicians whose illnesses antedated their becoming physicians and those whose didn't?

The writing, of course, varies. Some of the authors clearly enjoyed the assignment as writing; others warmed to the opportunity to expound, vent, seek revenge (these passages should have been severely edited, including at least one personal reference). Writers Ober (a professional physician-writer of note), Louise Scott (who describes herself as "having once been on the tapered end of IV's, nasogastric tubes, barium enemas, and endoscopes"), Wood, Thompson, Felson (very entertaining, Maurice Raskin, and Brice stand out. Individual authors can reach quotable heights, eg, Barry Zaret, "No one can teach how sensitive the pleura are."

The authors provide a useful epilogue with their observations about these narratives. They include some I have mentioned with considerably more detail. Along with the epilogue are references to other self-descriptions by physicians gleaned from various journals. A bibliography of these and other references would have been even more useful. Curiously, one detects an attitude towards some of their authors that borders on hostility. It is as though Mandell and Spiro are saying, "Cut out the breast-beating and get on with the healing." Perhaps they are right. (Editor Mandell is also author Mandell!) This interpretation, if correct, affords yet another area for study and discussion.

Some minor quibbles: If professional editors like Plenum's do not stem the tide of "No one. . .they" discordances, who will? Some authors (notably Lundin) preached, while the sheer weight of others' awkward styles (notably Austen) impeded reading. Both (paired, interestingly, in their own chronic disease section) needed helpful editing. The glossary provided at the end of the book—a good idea—is inconsistent and incomplete. Were there too many authors? (A representative from Plenum even worried out loud to me about this possible criticism.) If one values primary sources and believes in their uniqueness, as I do, then the answer is "No." No one should feel compelled to read every word of a book merely because someone else has written it.

One other minor but real complaint. The editors evidently furnished the authors with guidelines, questions about religion, the effect of the illness on their practice, relationships with physicians, etc. This strength became a weakness when the editors did not sufficiently hide the scaffolding. One reads, for example, "In summary," "In closing," "Finally." This adherence to a formulaic structure (account, observations, role of religion, change in your life, conclusion) has an unfortunate damping effect on the spontaneity more often encountered in *When Doctors Are Patients*. I do not begrudge the editors their art; I simply wish they had concealed it better. To be fair, this defect only surfaces when the collection is read all at once.

When Doctors Get Sick is an important book. It offers interesting and varied insights into physicians and their attitudes to their own illnesses, their reactions to illness and the loss of control, their (acquired?) inability to adopt the sick role, as Talcott Parsons called it, and the important questions about the "soft" medicines some of us prescribe for our patients and ourselves—the medical humanities. As the editors remark in their epilogue, "There is little poetry in doctors' accounts of their own illnesses because most physicians find little poetry in medicine." No wonder that the editors, when asking for first-person narratives, received only prose. Poetic accounts of illness by non physicians, like L.E. Sissman's *Dying: An Introduction*, or much of Robert Lowell's and Sylvia Plath's work, are common. Poems like Kenneth Beernink's in this issue of *Connecticut Medicine*, therefore, are to be studied even more carefully, and cherished. We in medicine need more, not less, exposure to the humanities.

Barry Zaret raises a very important question at the end of his narrative about his traumatic scrape with death. "Heightened sensitivity comes only within the context of experience. Can the surrogate experience of some be transmitted effectively to many? This, of course, is a challenge of the current volume." If reading about sickness is the next best thing to being sick, when being sick with every variant of every illness is not possible, then this book has successfully accomplished one of its goals: "These stories provide texts for discussion not only of how to be a patient but of how to be a doctor."

I would give every new house officer three books: the Washington Manual, DeGowin and DeGowin, and *When Doctors Get Sick*.

Richard M. Ratzan, M.D.
Farmington, CT

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Please send them to:

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From the Executive Director's Office

CALL
ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1988 Annual Meeting of the House of Delegates will be held at the Ramada Inn, 275 Research Parkway, Meriden. The meeting will commence at 10:00 A.M. on Wednesday, May 4, and will continue until all business has been concluded.

9:30 Registration and Continental Breakfast
10:00 Call to Order

James P. Orphanos, M.D., President
Lawrence B. Ahrens, M.D., Speaker of the House
Annemarie Welch, M.D., Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society provides that:

Resolutions may be introduced by any Active, Life Member, Student Member or Postgraduate Physician Member of The Society, in compliance with the following provisions.

a. *All resolutions, reports and similar items of business submitted in writing and received at the office of the Executive Director not later than thirty days before the date scheduled for that meeting shall be considered as regular business of the House of Delegates.*

b. *Component county associations or the Student Member or Postgraduate Physician Member Associations whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.*

c. *Reports, recommendations, resolutions or other new business may be presented to the House of Delegates by the Council of The Society at any time and shall be considered as regular business.*

d. *Any business which does not qualify as regular business in accordance with the foregoing provisions may be accepted for consideration by a majority vote of the delegates present and shall be referred at once by the Speaker to a reference committee. When business is introduced under the provisions of this paragraph the vote shall be taken without debate, except that the introducer shall be allowed not more than two minutes to explain why it should be considered as regular business.*

COUNCIL MEETING

Wednesday, February 17, 1988

Attendance

Present in addition to the Chairman, Dr. Guy W. Van Syckle and Vice-Chairman, Dr. M.S. Eslami were: Drs. Abbot, Ahrens, Beck, Bobruff, Bonner, Czarsty, Fox, Freedman, Kamens, McDonnell, Orphanos, Petrie, Ragusa, Reyelt, Jr., Robbins, Rubin, Sadowski, Schwartz, Sosa, Upham, Villa, Wetstone, and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Sullivan, Mr. Staples, Mr. Tomat (FCMA), Mr. Fiorentino (HCMA), Mr. Freberg (NHCMA), and Mrs. Ganguli (President, Auxiliary).

Absent were: Drs. Ahamed, Chmieleski, Dardick, O'Brien, Rose, Sullivan, Jr., Welch, Jr. and Zanker.

Reports from Physicians Serving on State and Federal Agencies

Dr. Kamens reported that the Governor's Advisory Committee to Study the Medical Effectiveness of the Prospective Payment System in the State of Connecticut has been reactivated. The Task Force will be seeking input from all sources to obtain documentable information as to whether the system is seriously affected by the Prospective Payments or whether it is felt that the system is working satisfactorily. Dr. Kamens further summarized the CPRO annual report in regard to quality of care in the state of Connecticut and at the Council's request the complete report will be published in *Connecticut Medicine*.

M.D. Health Plan

In the absence of Dr. Whalen, Dr. Van Syckle gave a brief update on M.D. Health Plan. He reported that the February issue of *Connecticut Medicine* outlines activities to date. The initial stock offering ended February 5, 1988. As of March 1 there will be 1,627 physicians participating in the plan and 3,570 members enrolled. Currently M.D. Health Plan is contracting with the hospitals in the state.

Report of the President

Dr. Orphanos reported our efforts to have a representative appointed to the Task Force on Nursing was not successful. CSMS was informed that it was not the original intent to have health organization representatives on this Task Force and that there would be ample opportunity for interested parties to present their views at public hearings. In accordance with Council action, a letter was sent to the Board of Trustees of the AMA expressing displeasure on the action taken on distribution of specialty journals. He reported that a member of the AMA Board of Trustees informed him that it would be fiscally irresponsible for the AMA to allow the loss of over three million dollars in publication costs and that it was necessary for them to go to a controlled circulation. The Ad Hoc Committee to study the possibility of establishing a charitable trust or foundation met and since the final report was not received until just prior to the Council meeting, it was decided to postpone reporting on this subject until the next meeting, in order that Councilors would have an opportunity to read the report. Dr. Orphanos briefly discussed the communication that was mailed from Travelers to all Medicare providers outlining the number of changes being made in payments to physicians. He asked staff to seek information from the AMA as to their opinion on these changes. He further reported on his attendance at the Leadership Conference which he felt was very worthwhile.

A motion that the CSMS Council express its concern to the Governor, the Speaker of the House, President of the Senate and the Chairmen of the appropriate committees, that there is still no contract with the Department on Aging on the Courtesy Card and to inform him that CSMS was totally supporting this program financially, was tabled until the next meeting.

Report of the Executive Director

Tim Norbeck reported on the following items:

1. Legislative efforts are being made in Connecticut to limit the contributions made to legislators by political action committees.
2. Jerald Schenken, M.D., a member of the AMA Board of Trustees, is running for a seat in the U.S. House of Representatives from Nebraska and is in need of financial support.
3. Mandatory assignment proponents have been active in a number of states. CSMS has received many requests for suggestions and strategy to prevent such legislation.

Following discussion, it was VOTED that the Council urge COMPAC, if possible, to support Jerald R. Schenken, M.D. from Nebraska.

Report of the Subcommittee on Preliminary Study of Nominations

With a few amendments, it was VOTED to approve the report of the Subcommittee and to transmit the complete slate of nominees to the House of Delegates for election with Council recommendation for approval. It was also VOTED to pay tribute to Drs. Abbot, Van Syckle and Whalen for their many years of service to CSMS.

Committee on Public Health—AIDS Policy

At the semi-annual meeting of the House of Delegates in November 1987, it was VOTED to accept the AMA Board of Trustees Report on Prevention and Control of AIDS as information with the understanding that a further definitive policy and recommendations were being developed for the CSMS Council and House of Delegates approval. It was VOTED to accept the following proposals of the Committee on Public Health and further that these proposals be released to the media.

CSMS AIDS Policy

In accordance with the principles of ethics of the American Medical Association, and guidelines promulgated during the past year from the Center for Disease Control of the U.S. Public Health Service, the CSMS encourages all members to provide diagnosis, treatment, and educational services to patients and/or the general public:

1. No patient should be denied services; if a physician is incapable by training or current practice to provide service, the patient must be assisted to find another practitioner or facility that can provide service.
2. Until such time as a vaccine or immunization for primary prevention is available, education is the main source for prevention. Physicians are urged to educate themselves and to provide education and risk behavior counseling to individual patients, and to groups as a community service to promote public health. Physicians are also urged to assess risk behavior.
3. Specific treatment for AIDS or ARC is currently limited, and may require consultation and/or referral to practitioners with expertise in infectious disease, immunology, and oncology. Counseling and other community resources for the care of patients with AIDS will require the coordination of social and other community resources. Physicians are urged to familiarize themselves with what is available in their communities.
4. Medical Ethics requires that patients not be refused treatment because of the nature of their illness.

Medicare

A communication was received from the Fairfield County Medical Association Board of Trustees requesting CSMS, through its leadership and/or special ad hoc committee, to confront Travelers Medicare with the problems being faced by physicians. It was VOTED to transmit this communication to the Council's Ad Hoc Committee on Medicare for study and report back at the next council meeting. Several changes were made in the membership of the Ad Hoc Committee and its present composition is as follows:

Andrew D. Weinberg, M.D., Branford, Chairman
Timothy F. Brewer, M.D., Middletown
Neil H. Brooks, M.D., Rockville
John T. DeMaio, M.D., Hartford
Paul Dolinsky, M.D., West Hartford
Stephen Levinson, M.D., Fairfield
Boris G. Rifkin, M.D., New Haven
Ronald Tietjen, M.D., Danbury

Committee on Hospitals

The Council referred three recommendations from the Health Policy Agenda for the American People to the Committee on Hospitals for study and report. All three recommendations were approved by the committee and it was VOTED to accept the report from the committee. The three recommendations are as follows:

a. Each health care facility should decide which professionals (both as a class and individually) are allowed to use each technology in the facility, subject to the facility's licensure requirements and the standards developed by health professional associations. Such decisions should be consistent with the professional practice acts in the state.

b. A patient's health record should include sufficient information for another health care professional to assess previous treatment, to ensure continuity of care, and to avoid unnecessary or inappropriate tests or therapy.

c. Conflicts between a patient's right to privacy and a third-party's need to know should be resolved in favor of patient privacy, except where that would result in serious health hazard to the patient or others.

The Committee on Hospitals also submitted the CSMS Hospital Medical Staff Section Bylaws and it was VOTED to accept these proposed bylaws.

Report of Subcommittee on Bylaws

An amendment which was presented to the House of Delegates on November 17 for action concerning Life Membership qualifications was returned for further study with the suggestion that the AMA provision for Life Membership be considered and that the amendment should also include a grandfather clause. Dr. Czarsty, Chairman of the Bylaw Committee submitted a revised amendment which was approved by the Council. This amendment will be acted on at the May 4, 1988 meeting of the House of Delegates as follows:

Article IV - MEMBERSHIP
Section 4 - LIFE MEMBERSHIP AND DUES REDUCTION

Par. 1 - Upon request any Active Member of the Society may become a Life Member or receive a dues reduction under the following criteria:

(a) Physicians permanently disabled pay no dues.

(b) 70 years of age or older and fully retired (working 0 hours per week) pay no dues.

(c) 70 years of age or older working 20 hours or less per week will be required to pay one-half of the regular dues. (Physicians working more than 20 hours per week pay full dues.)

(d) Fully retired physicians not 70 or over will be required to pay 20 percent of the regular dues rate.

Par. 2 - Any member eligible for Life Membership under Paragraphs 1(a) or 1(b) may apply for such membership to the Executive Director of the Society and shall become a Life Member on approval of the Executive Director of such application. The Executive Director shall subsequently report this action to the Council. Life Members or Members whose dues have been reduced shall not be subject to any assessments and shall be accorded all the rights and privileges of Active Members in this Society including the right to vote and hold office. Life Membership or the reduction of dues provided for under the provisions of Pars. 1 and 2 shall become effective on January 1 of the year following eligibility for such status.

Par. 3 - Life Members who were exempt from payment of dues based on age and retirement under Bylaws applicable prior to 1989 shall be entitled to maintain their dues-exempt status in all subsequent years.

An amendment re the quorum requirements for the House of Delegates was also submitted. It was approved by the Council and will be placed on the table at the next House of Delegates meeting. It is as follows:

> A quorum, TO CALL TO ORDER, any meeting of the House of Delegates shall consist of a majority of the sum of the number of delegates eligible to vote in the House. ONCE THE MEETING HAS BEEN CALLED TO ORDER, A QUORUM SHALL CONSIST OF FIFTY PERCENT OF THE TOTAL DELEGATES REGISTERED.

Life Members

It was VOTED to receive for information the following list of Life Members:

Name	Town
George A. Bonner, M.D.	Guilford
Bradford S. Colwell, M.D.	North Haven
Pasquale J. Costa, M.D.	Norwich
Edward A. Felder, M.D.	Darien
Peter B. Gram, M.D.	Bolton
James A. Kleeman, M.D.	Bethany
Russell A. Lobb, M.D.	Deep River
Vincent J. Longo, M.D.	New London
David L. Mayham, M.D.	Fairfield
James E. Ryan, M.D.	Bridgeport

It was VOTED to approve the request of William B. Lyons, M.D., Southbury, to be granted Life Membership. Dr. Lyons had the sufficient number of years to be eligible for Life Membership, but they were not consecutive as is required by the Bylaws.

Disability Insurance

It was agreed that the CSMS Committee on Insurance should confer with disability insurance carriers to determine their attitude toward payments to physicians who are HIV positive but do not have AIDS who are not allowed to practice in a hospital because of possible contamination of patients.

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on February 17, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

ANESTHESIOLOGY

Anesthetist wanted part-time for ambulatory eye surgicenter; pleasant environment. Send current curriculum vitae to Eye Associates, 255 W. River St., Milford, CT 06460.

EMERGENCY MEDICINE

Several full-time positions available in expanding Emergency Department serving a relatively small, very pleasant greater Hartford area community hospital. BE or BC internists, family practitioners and emergency medicine trained physicians given equal consideration. Competitive salary with a full benefit package. Send CV to: Bradley Memorial Hospital, Personnel Dept., 81 Meriden Ave., Southington, CT 06489.

GENERAL PRACTICE

G.P./F.P./Internist for established center in southeastern Connecticut. Call Kathy Williams at (203) 443-4255.

INSTITUTIONAL AND INDUSTRIAL MEDICINE

Part-time physician needed for sexually transmitted clinics and international travel clinics at the New Haven Health Department. Call the Medical Director at 787-8184 or send resume to the New Haven Health Department, c/o Medical Director, One State St., New Haven, CT 06511.

JCAH accredited 103-bed hospital specializing in alcohol and substance abuse, seeking physician to provide diagnosis, care and treatment of patients in small, urban State Hospital. Completion of an approved residency program and a license to practice medicine and surgery in Connecticut is required. No routine "on call" duty. Salary commensurate with experience and training plus full State benefit package and bonus for Board Certification. Please contact Dr. Marilynn Stuart at 566-3058.

Occupational physician needed 8-12 hours per week. Specialty chemical manufacturing division of major pharmaceutical firm seeks an independent contracting physician as a medical doctor. Must possess M.D. or D.O. degree, current unlimited Connecticut license and be a U.S. citizen. Will consider general and primary care background. Compensation commensurate with training and experience. Forward resume in confidence to: Gary Lehrer, The Upjohn Co., 410 Sackett Point Rd., North Haven, CT 06473. EEO employer M/F/V/H.

INTERNAL MEDICINE

Wanted: Ambitious BC/BE internist for expanding computerized solo practice. $50,000 guarantee with shared overhead. Benefits: malpractice (one year), four weeks vacation and four day work week. Beautiful shoreline location in Connecticut minutes from Yale. Serious replies only. Send CV with letter of interest in confidence to: Dr. Andrew Weinberg, 144 N. Main St., Branford, CT 06405.

Medical practice for sale. BC internist will be retiring during the summer of 1988. Modern office in a modern office building with private parking, close by the New Britain General Hospital, a teaching hospital of University Connecticut Medical School. Excellent group coverage available. Contact Dr. Sidney E. Eisenberg, 33 Lexington St., New Britain, CT 06052. Call evenings (203) 229-6982.

INTERNAL MEDICINE/FAMILY PRACTICE

Small practice for sale. Excellent location; 25 miles from New Haven. Includes office equipment. Low rent. Write, CSMS, IM/CN.

INTERNAL MEDICINE/GENERAL PRACTICE

Established New Haven Internal Medicine/General Practice, professionally appraised $90,000; for sale @ $75,000 to allow owner to take another job. Includes new furniture and high quality equipment (X-ray, spirometer, blood testing machine, EKG, typewriters, dictaphone, telephones, etc.). Grosses $175,000/yr on a 20 hr/wk schedule. Growth potential unlimited. Will introduce for desired length of time. Lease available. Write, CSMS, c/o Box DS.

MISCELLANEOUS

Fee-basis, part-time, physicians needed to assist in physical examinations at the New Haven Military Entrance Processing Station. M.D.'s, D.O.'s, licensed in Connecticut, DC or PR. $125.00/$150.00 for approximately 2½ hours of work. Call Dr. Gerhard Mack, (203) 787-3823 or write: Commander, New Haven MEPS, 150 Court St., (4th floor), New Haven, CT 06510-2056.

OPHTHALMOLOGY

Connecticut Practice: Challenging established "complete-surgical" consultative private solo practice in Ivy-league setting of semi-retired well-known practitioner. Must be humanitarian, carry own malpractice insurance; Connecticut licensed; BC/BE. Please reply to: P.O. Box 1085, Orange, CT 06477-7085.

PEDIATRICS

Neonatologist. BC/BE. Full service Community Hospital in lower Fairfield county, Connecticut seeks a part-time Neonatologist to expand capabilities of Level I Nursery and work closely (including coverage) with a well-established Level II Nursery. Opening available immediately. If desired, opportunity with a combined part-time position in a general pediatrics practice is also available. Send CV to: Chairman, Neonatologist Search Committee, St. Joseph Medical Center, 128 Strawberry Hill Ave., P.O. Box 1222, Stamford, CT 06904.

BC/BE well-trained pediatrician wanted to join long and well-established solo practice in central Connecticut. Located in attractive community with excellent hospitals and medical school. Early partnership. Send CV and references to CSMS, c/o PED/EA.

PRIMARY CARE

Internist. BC/BE, w/wo subspecialty to join ABIM Internist in expanding primary care practice in New Haven suburb. Yale affiliation. Competitive salary plus incentive leading to early partnership. Send CV to Dr. J.D. Gaines, 1122 Highland Ave., Cheshire, CT 06410.

Excellent opportunity for primary care physician to join physician, cross coverage group while enjoying independent practice in rural New England setting. Modern, well-staffed 250 bed acute care hospital. Good office space with well-established patient base. Centrally located—less than two hours from Boston and New York City. Excellent educational opportunities. Send resume to: N.J. Seguljic, M.D., P.C., P.O. Box 442, Terryville, CT 06786. (203) 583-1605.

BE or BC Primary Care Internist needed to join a busy, lucrative internal medicine group, located off Interstate 395 in Northeast Connecticut in a newly constructed building with in-house X-ray and laboratory facilities. Send CV to CSMS, c/o Box LQ.

RADIOLOGY

Excellent opportunity in independent practice, Diagnostic Radiology, in a small general hospital, Northwestern Connecticut. Candidate should be a diplomat of the American Board of Radiology in Diagnostic Radiology and qualified in CT, Diagnostic Ultrasound and Nuclear Medicine. Excellent compensation with opportunity to acquire equity interest in practice. Send CV to CSMS, c/o RAD/NR.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

ANESTHESIOLOGY

March '88. Age 36. Licensed in Connecticut. Presently in practice. Nat'l bds. AB elig. MD, Medical College of Wisconsin, Milwaukee, WI; Int. and Res., University of Michigan Medical Center, Ann Arbor, MI; Fellowship, Veterans' Hospital, University of Michigan Medical Center. Prefers a group type practice. Write, Mark P. Haubrich, M.D., 2500 East Bay Dr., #1-B, North Bend, OR 97459.

Jan. '88. Age 35. Licensed in Connecticut. Presently in practice. Nat'l bds. AB cert. MD, State University of NY (Downstate); Int. and Res., Albert Einstein Medical Center, NY (Sur); Cornell NY Hospital/Sloan-Kettering (Anes). Prefers group, industrial, academic or development and marketing for a scientific corporation type of practice. Write, Bruce S. Gottlieb, M.D., 129 Phipps Dr., West Haven, CT 06516.

April '88. Age 33. Presently in practice. FLEX. MD, University of Guadalajara, Mexico; Int., University of Connecticut, Farmington; Res. and Fellowship, University of Rochester, NY. Prefers group or associate type practice in a medium to large-sized community. Write, CSMS, c/o CD/ANES.

FAMILY PRACTICE

July '88. Age 40. Licensed in Connecticut. Nat'l bds. AB cert. MD, University of Bologna, Italy; Int. and Res., Glen Cove Community Hospital. Prefers solo, associate, or institutional type practice with no obstetrics if possible. Write, John E. DeLoria, M.D., VIA A. Caro 3B, 60019, Senigalli, Italy.

Dec. '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC (Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

March '88. Age 74. Licensed in Connecticut. Nat'l bds. AB cert. MD, State University of New York; Int., Brooklyn Hospital, Brooklyn, NY; Res., Post-Graduate Hospital and Mt. Sinai Hospital, New York, NY (Surgery); Fellowship, Bowen-Brook Fellow in Surgery, NY Academy of Medicine. Has experience in malpractice claims review. Prefers group, associate, insitutional or industrial type practice. Write, M. Judson Mackby, M.D., 82 Saunders Lane, Ridgefield, CT 06877.

GENERAL SURGERY

Aug. '88. Age 42. Presently in practice. FLEX. AB cert. MD, Damascus University, Syria; Int., Waterbury Hospital, Waterbury, CT; Res., Bronx-Lebanon Hospital, New York, NY. Prefers group, associate or institutional type practice in a medium to large-sized community. Write, Tareq Al-khatib, M.D., 315 12th St., Dyersville, Iowa 52040.

INTERNAL MEDICINE

July '88. Age 42. Licensed in Connecticut. FLEX. AB elig. MD, Ludwig Maximilians-Universitaet, West Germany; Int. and Res., Bridgeport Hospital, Bridgeport, CT. Prefers solo, group, associate or institutional type practice. Write, Rona Lieberman, M.D., 8 Garden St., Milford, CT 06460.

Immediate available. Age 41. Licensed in Connecticut. AB elig. MD, University of Rajasthan, S.P. Medical College, Bikaner, India; Int. and Res., Bronx Lebanon Hospital Center, Bronx, NY. Master of Surgery, University of Rajasthan, S.P. Medical College. Prefers group or associate type practice in a medium-sized community. Write, Sardul J. Singh, M.D., 103 Woodland Hills Rd., White Plains, NY 10603.

Endocrinology. July '88. Nat'l bds. AB elig. MD, Rush Medical College, Chicago, IL; Int., Res. and Fellowship, Winthrop-University Hospital, Mineola, NY. Prefers working with a small group or partner in a medium-sized community. Write, Gerald B. Miele, M.D., 110 Fleet Place, Mineola, NY 11501.

INTERNAL MEDICINE/PEDIATRICS

Oct. '88. Age 32. Presently in practice. Nat'l bds. AB cert. (Ped); AB elig. (IM). MD, State University of NY (SUNY) at Buffalo; Int. and Res., St. Louis University Hospital/Cardinal Glennon Children's Hospital, St. Louis, MO. Prefers group or institutional type practice with a strong interest in ambulatory care of both adult and pediatric patients. Write, Joseph T. Wayne, M.D., 106 Elmwood Dr., Prudenville, MI 48651.

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Current Status of Coronary Angioplasty

JOSE C. MISSRI, M.D.

PERCUTANEOUS transluminal coronary angioplasty (PTCA) has become the initial revascularization procedure in many patients with coronary artery disease. In part, this reflects the general acceptance of this procedure as a valuable therapeutic tool. As our understanding of the procedure and its results have improved, its application has broadened. Single-vessel bypass has become a rarity at most institutions performing angioplasty, unless chronic total occlusion is present or failed PTCA has occurred. In the subset of patients with single-vessel disease, PTCA is reasonable if symptoms are poorly controlled medically or there is evidence of substantial myocardium at risk. However, there is some concern that PTCA has been over utilized in single-vessel disease, since patients with stable symptoms and modest degrees of ischemia can safely receive medical therapy until a time when symptoms progress.

Certain patients with multi-vessel coronary artery disease may now benefit from PTCA. Ideally, all lesions in any such individual should be potentially treatable with the technique. It may not be possible to dilate all stenosis during a single procedure, although every attempt is made to do so. If an optimal result is not achieved when dilation of the initial lesion is attempted, the dilation of other lesions may await follow up assessment.

Patients with recent (less than three months) total occlusion, acute occlusion in a setting of myocardial infarction, and unstable angina are also frequently angioplasty candidates, and surgery can often be avoided or postponed in such individuals. Yet data from many institutions show no convincing evidence that angioplasty is, in fact, being substituted for bypass to any major extent. Utilization of both revascularization techniques continues to rise yearly. Although over utilization of PTCA could be one factor, many patients, especially those with left main or three-vessel disease, are not angioplasty candidates because of diffuse disease, chronic total occlusions, inaccessible anatomy, or increased risk. At most institutions, only one in four patients with three-vessel disease is a likely candidate for angioplasty, and of these; only about one in four will have all significant lesions treated successfully after PTCA. (Table 1)

Table 1

PTCA: CURRENT AND NEW INDICATIONS

- Single-vessel disease
- Multivessel disease with functionally important lesions amenable to PTCA
- Q-wave infarction
- Non-Q-wave infarction
- Following CABG:
  - to treat graft stenosis or
  - to treat residual or new ungrafted disease
- Recent complete occlusions

Limitations of PTCA

In addition to providing, in general, less extensive revascularization, angioplasty has other limitations. Restenosis of the dilated segment occurs in 25-30% of patients and unanticipated acute total occlusion in 4-5%. The great majority of chronic total occlusions cannot be dilated, and left main lesions are considered too risky for routine dilation. Up to 5% of patients undergoing angioplasty require urgent surgical revascularization because of total occlusion, either from thrombus or extensive intimal dissection. These patients have a substantial mortality (5%) and incidence of myocardial infarction (25-50%), negative outcomes that are often glossed over by proponents of the technique. As the number of multivessel angioplasty patients has increased, so has the need for subsequent surgical revascularization. (Table 2)

Table 2

CONTRAINDICATIONS TO PTCA

Facility Limitations

- No surgical back-up facilities
- Inadequate radiographic equipment
- Lack of trained operators

Patient Limitations

- Lack of informed consent
- Unprotected left main coronary artery stenosis
- Patients in whom occlusion of the vessel to be dilated would result in such major hemodynamic compromise that a fatal outcome is likely
- Patients with physiologically important vessels that cannot be dilated.

New Strategies for PTCA

If angioplasty is to become a meaningful substitute for coronary artery bypass graft (CABG) on a national basis, some of these limitations must be overcome. Specifically, we must develop new strategies in the following areas: 1) unexpected acute occlusion, 2) restenosis,

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JOSE C. MISSRI, M.D., Associate Director, Section of Cardiology, Saint Francis Hospital and Medical Center, Hartford, CT; Associate Professor of Medicine, University of Connecticut School of Medicine, Farmington, CT.

and 3) advanced coronary disease, including diffuse lesions and chronic total occlusion.

Comparison of PTCA and CABG in Patients With Multi-Vessel Coronary Artery Disease

Comparison of PTCA and CABG results is particularly important here, since bypass surgery has been shown to prolong life in certain subsets of patients with multi-vessel disease. It is incumbent on proponents of PTCA to prove that it can also prolong life in these patients' subsets. For example, with the PTCA techniques available now, chronic total occlusion is a fairly common occurrence in multi-vessel disease, and cannot be crossed with any high degree of success.

Long-term patency remains an issue as well. The saphenous vein bypass closure rates are known—about 15% overall at one year and about 50% at ten years. Internal mammary patencies are much better, with some 90% to 95% remaining open at eight to ten years. In order to make meaningful comparison, one must know the long-term success rates in treating multi-vessel disease by PTCA, and these studies are now being undertaken.

Atherectomy and Laser Catheters

A variety of atherectomy catheters are under development, which may allow "debulking" of long, diffusely diseased areas. Some have actually been used in vivo with limited success. Laser catheters, perhaps in combination with atherectomy and angioplasty, may allow successful reopening of chronically occluded vessels when clinically indicated. If so, these advances would improve the ability to achieve so-called "complete revascularization," as is usually attempted with bypass surgery. Although this goal has been considered important in the outcome of bypass operation, excellent results have been achieved with angioplasty in cases in which revascularization has been less than complete. It appears that modest degrees of incomplete revascularization and concomitant medical therapy often result in clinically acceptable outcomes.

Conclusion

The National Heart, Lung, and Blood Institute has organized a multi-center randomized trial to compare in a rigorously standardized scientific protocol the outcome of revascularization of comparable patients by either coronary bypass or coronary angioplasty, both early and late. This BARI (Bypass Angioplasty Revascularization Investigation) trial will allow for controlled evaluation of these two competing revascularization techniques and, we hope, will give some practical guidelines for this issue in the future.

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Cancer Pain: Treatment with a Nonimplanted Epidural Narcotic Infusion Pump

EDWARD P. HARGUS, M.D. AND JOHN N. GERMAN, M.D.

ABSTRACT—Treatment of intractable cancer pain may pose a major problem for those caring for terminally ill patients. Four cases are described that utilize an external pump for the delivery of constant infusion morphine. External pump constant infusion of morphine provides safe and effective pain control for intractable cancer pain. This method offers rapid discharge from the hospital and ease of administration and dosage change.

TREATMENT of intractable cancer pain by spinal or epidural morphine administration has recently been added to the armamentarium of oncologists, pain management specialists, and other physicians caring for those with terminal malignancy and intractable pain.[1-6] Several cases are described which highlight the use of a nonimplantable infusion pump to deliver a constant infusion of epidural morphine. The possible advantages of this technique are discussed.

Cases:

Case #1

D.G. was a 38-year-old man who was referred to the pain management clinic in August 1987 because of intractable cancer pain. He had renal cell carcinoma of the right kidney diagnosed one and a half years previously. This had been surgically and medically treated out of state. At the time of his hospitalization he had multiple sites of metastases contributing to his pain. They included: paraesophageal, paratracheal, retroperitoneal, para-aortic, and retropleural. At home he required intermittent morphine injections and morphine sulfate controlled release tablets, 60 mg every 12 hours, dihydromoyphone 4 mg every 3-4 hours, and oxycodone hydrochloride as needed. He was somnolent and bedridden.

An epidural catheter was placed in the lumbar area, sutured in place, and tunnelled to the anterolateral abdominal wall. The catheter was attached to a constant infusion pump (CADD-PCA, Model 5100HF, Pharmacia, Inc., Piscataway, NJ). The morphine infusion was increased to 25 mg per day over several days before adequate analgesia was obtained. At discharge he was ambulatory, not somnolent, and also taking morphine controlled release tablets 30 mg twice a day.

He remained ambulatory until shortly prior to his death at home in September 1987. One day prior to his death his medications included epidural morphine, 80 cc per day; morphine tablets, 30 mg twice a day; and subcutaneous hydromorphine 2-4 mg every 2-4 hours. Because the family could no longer emotionally tolerate giving subcutaneous morphine, he was changed to a constant infusion of subcutaneous morphine at 2 mg per hour via a Pharmacia CADD-PCA, Model 5200 pump (Pharmacia, Inc., Piscataway, N.J.). The subcutaneous dose was increased to 3 mg per hour by the time of his death.

Case #2

J.T. was a 66-year-old woman referred to the pain clinic in July 1986 because of suspicion that her epidural catheter, which had been inserted elsewhere, had become dislodged. Ten years previously she had had an abdominal perineal resection with removal of a portion of the vaginal wall for adenocarcinoma of the rectum. In 1985 she was admitted because of abdominal pain. A CT scan revealed a large pelvic mass which was treated with radiation therapy. Pain continued and referral to another pain management center resulted in tunnelling an epidural catheter into the anterolateral abdominal wall. The catheter became dislodged twice necessitating reinsertion. On the third occasion she was referred to our clinic. At the time she was ambulatory and taking morphine 20 mg every four hours on an as needed basis and epidural morphine 7 mg every twelve hours via an intermittent technique. Another catheter was placed in a similar manner except that it was sutured subcutaneously in the back. One month later the catheter again became dislodged and was replaced in a similar manner. By September 1986 the epidural morphine was increased to 5 mg every eight hours. She was able to ambulate with a walker, but needed an indwelling Foley catheter because of the development of a neurogenic bladder. In mid-September she was placed on the Pharmacia, CADD-I model 5100HF pump because of the necessity to rapidly increase the epidural morphine. By mid-November she was taking 40 mg per day of constantly infused epidural morphine. She was also taking liquid morphine 20 mg every four hours. Adequate analgesia was achieved, but she could no longer walk. Morphine controlled release tablets were added, and by the end of November she was taking 90 mg twice daily in addition to liquid morphine. By early December she was receiving 50 mg daily of

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epidural morphine, 150 mg twice daily of morphine controlled release tablets, and 50 mg every four hours of liquid morphine. She was only comfortable while lying still. Approximately 24 hours prior to her death in January a constant infusion of subcutaneous morphine was started at 2 mg per hour because of her inability to retain oral medications.

Case #3

C.F. was a 54-year-old man who was referred to the pain service in September 1986 because of intractable pain related to diffuse bone invasion by a poorly differentiated large-cell carcinoma whose primary site was undetermined. Bone involvement included both femurs, ribs, vertebra, and pelvis. At the time he was seen his medications included hydromorphine, 4 mg every three hours as needed; meperidine, 50 mg orally every six hours; and acetaminophen with oxycodone, every six hours as needed. Since his life expectancy was thought to be short a permanent epidural catheter was placed in the lumbar area, sutured subcutaneously, and tunnelled to the anterolateral abdominal wall. A constant infusion of morphine of 10 mg per day via a Pharmacia, CADD-I Model 5100HF pump provided excellent relief. He was discharged on methadone to prevent withdrawal symptoms and 10 mg per day of epidural morphine. A needle biopsy of the prostate in November revealed poorly differentiated adenocarcinoma.

By January 1987 pain control was again inadequate despite receiving 25 mg per day of epidural morphine, 10 mg three times daily of methadone, and amitriptyline at bedtime. He was admitted again to optimize pain control. The epidural morphine was increased to 40 mg daily. Liquid morphine 15 mg every four hours, morphine tablets, 120 mg twice daily, and buffered aspirin every six hours were added. Adequate pain control was achieved at the expense of excessive sedation. Bilateral orchidectomies were performed on 1 July 1987. Over the next three days pain control became excellent despite decreasing narcotic usage. By April the continuous epidural morphine dose was 5 mg per day with intermittent oral morphine for breakthrough pain.

In June 1987 pain became more intense requiring an increase in epidural morphine to 45 mg per day; the addition of morphine sustained release tablets, 60 mg twice a day; and liquid morphine, 10 mg every three hours as needed. At the end of June he was admitted with cord compression at the fourth thoracic level. This responded to radiation therapy. Over the next several months he did well with gradual increases of medication. By mid-November, however, he was bed-ridden on epidural morphine at 50 mg per day; morphine sustained release tablets, 30 mg to 90 mg every eight hours; and liquid morphine, 14 mg every four hours. In his terminal state he was given subcutaneous morphine at the rate of 2 mg per hour by constant infusion.

Case #4

N.B. is a 58-year-old woman who underwent abdominal perineal resection for adenocarcinoma of the rectum in 1983. In 1985 she had a local recurrence which responded well to radiation therapy, debulking, and chemotherapy. In August 1987 she was referred for epidural catheter placement to control intractable perineal and left sciatic pain. At the time she was on morphine sustained release tablets, Contin 30 mg twice daily; and hydromorphine, 4 mg every three to four hours as needed orally. The catheter was placed in the lumbar epidural space, sutured in place, and tunnelled to the anterolateral abdominal wall. The catheter was attached to a constant infusion pump with a 50 cc cassette of morphine. The dose was gradually increased to 10 mg per day. She was able to discontinue hydromorphine, but continued morphine tablets to avoid problems with withdrawal. She quickly required an increase in the daily epidural morphine dose to 15 cc per day and needed intermittent hydromorphine. Approximately one month later the catheter became dislodged and was reinserted using the same technique.

By October 1987 the epidural infusion was increased to 40 mg per day and she was also taking morphine liquid 40 mg every four hours, and morphine tablets 150 mg twice daily. A Foley catheter was inserted because of the development of neurogenic bladder. Ambulation was painful and necessitated a walker for support. She was, however, comfortable sitting mainly on one buttox. Again the catheter became dislodged in October; the patient refused admission for reinsertion of the catheter.

Discussion

Wang was the first to demonstrate relief of cancer pain in patients by the spinal administration of narcotics.[7] Since then numerous reports have confirmed his findings and expanded the route to include epidural and intraventricular narcotics.[1-8] Indeed the epidural administration of narcotics is presently the treatment of choice; indications for this technique not only include cancer pain, but also postoperative and obstetrical pain, as well as other pain states.[9-10]

Some authors have relied on an intermittent injection technique[3,5,8,11] and others on an implanted constant infusion technique.[1,2,4-7,12-14] Intermittent injections require that the patient, family members, or other care givers be able to open ampules, attach needles to syringes, draw up correct amounts of drug, and inject in a sterile fashion. These are not easy tasks for nonmedically oriented persons. Intermittent techniques are potentially less costly but may involve visits several times a day by a care giver until the patient and family are familiar with the technique.

Constant infusion techniques were first applied to the intraspinal delivery of narcotics using a buried infusion pump. This technique has several potential disadvantages. The device itself is expensive and not reusable.

It must be inserted in an operating room, and dosage adjustments at frequent intervals are not practical. Constant infusion techniques may, however, be associated with a slower development of tolerance.[5,6,15]

The administration of morphine by means of an epidural catheter and pump device that is totally external to the patient was first reported by Wermeling et al.[16] The pump utilized (Travenol Infusor, Trevenol Laboratories Inc., Deerfield, Illinois) was light weight and relatively simple to use; it did, however, require considerable patient and care giver education. With this device, changing the total amount of morphine delivered per day required changing the concentration rather than rate of infusion of morphine. If frequent medication adjustments were required a considerable inconvenience was encountered. The pump utilized in our cases, Pharmacia, CADD I Model 5100HF, has several advantages. Cassettes of 50 to 100 cc are used to store narcotic at a constant concentration which is then delivered at an easily adjustable rate. Usual cassette changes range from once a week to daily. Computerization of the pump allows for rapid rate changes with new models, such as the CADD-PCA Model 5200, allowing for intermittent bolus injections. Patients and care givers rapidly learn how to change cassettes and adjust rates, thus allowing for more rapid discharge from the hospital. In fact, visiting nurses or home health care personnel can assume these tasks while the patient is home. The technique is expensive, however. The pump costs approximately $2,500, but is usually leased at about $300 per month. Supply costs depend upon medication usage. Epidural morphine costs approximately one dollar per milligram with cassettes costing about $40 each. It may be possible to reduce costs with institutional evolvement in this approach to the treatment of intractable cancer pain. To date patients and care givers have been pleased with this approach.

In summary, delivery of epidural morphine using an external pump can be a valuable adjunct to those caring for terminally ill cancer patients with intractable pain.

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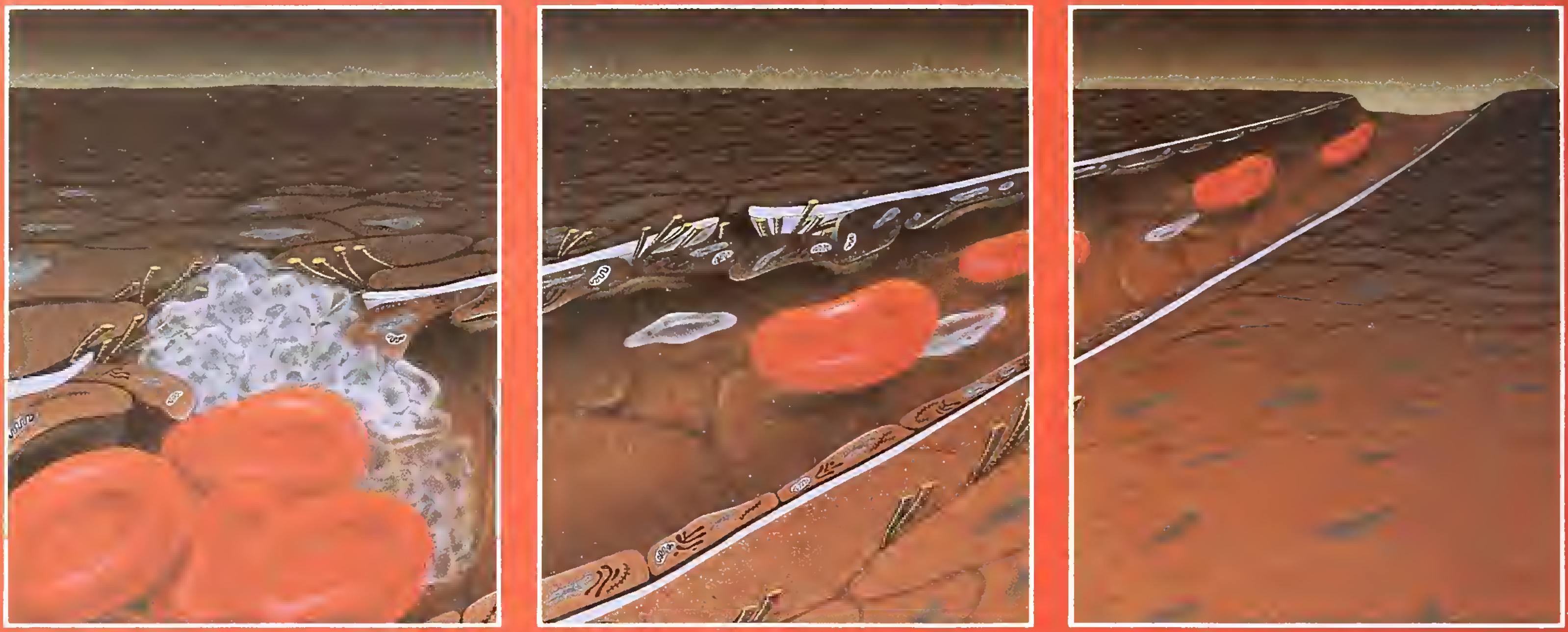
Prevent the event



Artist's depiction of red blood cells and platelets

PLATELET ADHESION INHIBITOR

Persantine®

(dipyridamole) Tablets of 25, 50 and 75 mg

Prevents thromboembolic events when used in combination with coumarin anticoagulants in cardiac valve replacement

Brief Summary of Prescribing Information

Contraindications: None known.

Precautions: *General:* Persantine® (dipyridamole USP) should be used with caution in patients with hypotension since it can produce peripheral vasodilation.

Carcinogenesis, Mutagenesis, Impairment of Fertility: In a 111 week oral study in mice and in a 128-142 week oral study in rats, Persantine produced no carcinogenic effects at doses of 8, 25 and 75 mg/kg (1, 3.1 and 9.4 times the maximum recommended daily human dose). Mutagenicity testing with Persantine was negative. Reproduction studies with Persantine revealed no evidence of impaired fertility.

Teratogenic Effects: Pregnancy Category B: Reproduction studies have been performed in mice, rats and rabbits at doses up to 125 mg/kg (15.6 times the maximum recommended daily human dose) and have revealed no evidence of impaired fertility or harm to the fetus due to Persantine. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers: As dipyridamole is excreted in human milk, caution should be exercised when Persantine is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children below the age of 12 years has not been established.

Adverse Reactions: Adverse reactions at therapeutic doses are usually minimal and transient. On long-term use of Persantine® (dipyridamole USP) initial side effects usually disappear. The following reactions were reported in two heart valve replacement trials comparing Persantine and warfarin therapy to either warfarin alone or warfarin and placebo:

	Persantine/ Warfarin (N = 147)	**Placebo/ Warfarin** (N = 170)
Dizziness	13.6%	8.2%
Abdominal distress	6.1%	3.5%
Headache	2.3%	0.0
Rash	2.3%	1.1%

Other reactions from uncontrolled studies include diarrhea, vomiting, flushing and pruritus. In addition, angina pectoris has been reported rarely. On those uncommon occasions when adverse reactions have been persistent or intolerable, they have ceased on withdrawal of the medication.

When Persantine was administered concomitantly with warfarin, bleeding was no greater in frequency or severity than that observed when warfarin was administered alone.

How Supplied: Persantine® (dipyridamole USP) is available as round, orange, sugar-coated tablets of 25 mg, 50 mg and 75 mg coded BI/17, BI/18 and BI/19 respectively. They are available in:

25 mg: Bottles of 100; Bottles of 1000; Unit Dose Packages of 100

50 mg: Bottles of 100; Bottles of 1000; Unit Dose Packages of 100

75 mg: Bottles of 100; Bottles of 500; Unit Dose Packages of 100

Consult package insert before prescribing.

PE-4024A PE-BPI-10/86

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Pharmaceuticals, Inc
Ridgefield, CT 06877

Important Advances in Clinical Medicine

Obstetrics and Gynecology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in obstetrics and gynecology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in obstetrics and gynecology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Obstetrics and Gynecology of the California Medical Association and the summaries were prepared under its direction.

AIDS and Pregnancy

More than 50,000 clinical cases of the acquired immunodeficiency syndrome (AIDS) have been reported in the United States as of January 1988. It is now estimated that more than 2 million Americans have serologic evidence of human immunodeficiency virus (HIV) infection. The Centers for Disease Control (CDC) define the following groups of women to be at high risk for HIV infection: intravenous drug abusers, prostitutes, partners of men with HIV infection, immigrants from certain endemic areas—Haiti and Central or Eastern Africa—or partners of men from these areas, and those who received blood or certain blood products before 1985. Although women currently constitute only 10% of all AIDS cases and most of these belong to one of the defined high risk groups, the number of seropositive women may increase dramatically in the near future as heterosexual intercourse becomes a more common mode of transmission. The incidence of HIV seropositivity in pregnancy may also rise because many of these women will be in the reproductive age group.

All seropositive women should be counseled about the implications of HIV infection for themselves and their progeny. The best estimates currently suggest a 50% risk of transmitting the virus from an infected woman to her fetus. Infants with HIV infection generally become ill within the first one to two years of life and can be expected to die within two years of the onset of symptoms. Pregnant seropositive women are also at increased risk for premature labor, premature rupture of the membranes, and intrauterine growth retardation. Cesarean section does not protect a fetus from HIV infection as it does from herpesvirus infection. Breastfeeding is containdicated because the virus has been documented in human breast milk. There are considerable risks of maternal HIV infection for the fetus. There is some disagreement as to whether pregnancy and its associated alterations in the immune system accelerate the progression of HIV disease.

Anticipating a growing number of HIV seropositive women, the CDC has recently issued recommendations for preventing HIV transmission in the course of providing health care to these women. All patients should be considered potentially infected, and appropriate precautions in handling blood, blood products, and secretions should be practiced routinely. Gloves, masks, gowns, and protective eyewear are suggested for all invasive procedures and for cesarean and vaginal deliveries. Gloves and gowns should be worn when handling the umbilical cord, placenta, or a newborn when amniotic fluid or blood is present.

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Recommendations for prevention of HIV transmission in health-care settings. *MMWR* August 36, 1987; suppl:2S.

Diagnosing Breast Disease

Diagnosing breast disease is based on physical examination, imaging techniques, and biopsy.

A patient, following an instruction manual, should routinely examine her breasts about one week to ten days after menses. Examination by a physician should be on at least a yearly basis with appropriate follow-up and management of suggestive lesions, especially for patients with high risk factors.

The American Cancer Society recommends a screening baseline mammogram at age 35, then a mammogram every other year from age 40 to 50, and yearly mammograms beginning at age 50. Women having screening mammograms have a reduced mortality rate from breast cancer compared with controls. Screening mammography may indicate patients requiring biopsy by revealing architectural distortion or microcalcification. This technique may also reveal a breast tissue type at a higher risk for carcinoma, indicating yearly mammographic surveillance, even if the patient is younger than 50 years.

In cases of suggestive masses, mammography may be indicated before an open biopsy is done. The presence of calcification in a mass is used to confirm removing the questionable area by a postbiopsy mammogram that reveals remaining calcification in the specimen. Also, subclinical masses requiring biopsy may be discovered by a prebiopsy mammogram.

Ultrasound imaging of the breast is useful in differentiating solid from cystic masses, finding abscesses in patients with severe mastitis, and providing guidance for needle aspiration of deep breast cysts. Its value as a screening tool has not yet been proved.

With fine-needle aspiration, a cytologic technique is used for assessing breast lesions; its accuracy is approximately 90%. A cystic mass can be eliminated. Diagnoses are made earlier when fine-needle aspiration is used at the time a lump is first evaluated. If carcinoma is found, a patient will receive appropriate counseling and therapy earlier, and the anxiety of waiting for a surgical consultation can be substantially diminished. A negative result does not eliminate the need for a formal biopsy.

Open biopsy, using either a local or a general anesthetic, is the cornerstone to diagnosing breast disease. Needle localization and biopsy of occult lesions have greatly increased the proportion of patients with carcinomas of favorable prognosis.

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Operative Laparoscopy

Operative laparoscopy offers notable benefits compared with laparotomy: decreased patient discomfort, length of hospital stay, and cost. Laparoscopic surgical options have been enhanced by using additional puncture sites and modern instrumentation including the laparoscopic laser. Results may be comparable to those with traditional laparotomy for a wide variety of gynecologic disorders including ectopic pregnancy, hydrosalpinx, endometriosis, and tuboovarian adhesions. Specific anatomic considerations, however, such as extent of disease and adhesions, may limit the use of operative laparoscopy and necessitate a surgical approach.

Although most ectopic pregnancies are ruptured or too advanced—greater than 3 cm in diameter—at diagnosis to permit treatment to be completed solely with the labaroscope, unruptured ampullary tubal pregnancies may be treated using the laparoscope to allow tubal preservation. A linear salpingostomy is made along the antimesenteric border of the tube after its base is injected with a dilute solution of a vasopressin (Pitressin) for hemostasis. The ectopic implant can then be removed with laparoscopic forceps.

The carbon dioxide and argon lasers both have laparoscopic applications, particularly for lysing pelvic adhesions and vaporizing implants of endometriosis. The argon laser is particularly useful because its wavelength, 488 nm, is selectively absorbed by pigments (hemosiderin and hemoglobin) concentrated in endometriosis implants.

Hydrosalpinx may be treated by laparoscopic incision of the ampullary portion of the tube after its distension with saline and methylene blue. Peritubal and fimbrial adhesions are lysed by microcautery or with the carbon dioxide laser. Tubal edges can be everted with a defocused laser beam to the tubal peritoneum.

Continuing innovation, such as laparoscopic suture placement, will expand on the indications for operative laparoscopy. Large case studies in the future will establish the choice of operative laparoscopy over conventional laparotomy.

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Endometriosis—New Insights Into an Enigmatic Disorder

The clinical symptoms associated with endometriosis include pelvic pain, as well as dysmenorrhea or infertility, or both. The pathognomonic feature of this disease is the presence of hormonally responsive endometrial glands and stroma in extrauterine sites. These lesions can vary dramatically in their appearance, ranging from violaceous nodules to simple petechiae. The visible and histologic manifestations of endometriosis are remarkably prevalent and have been identified in as many as 50% of premenopausal women. Fortunately, only 10% to 15% of women seem to be symptomatically affected. Contrary to earlier reports, endometriosis has no racial or socioeconomic predilection, although a polygenic and multifactorial hereditary propensity for endometriosis has been shown.

A definitive diagnosis requires direct visualization of the endometriotic lesions. Laparoscopy is the primary diagnostic method, with confirmation by biopsy if uncertainty exists. Ancillary diagnostic modalities, such as magnetic resonance imaging of the pelvis and serum concentrations of the coelomic antigen CA-125, currently lack the sensitivity and specificity, respectively, for routine clinical application. The American Fertility Society classification system, based on the visible sites and extent of involvement, has gained widespread acceptance for staging.

Hormonal therapy for endometriosis has included high-dose synthetic estrogens, progestins, oral contraceptives, androgens and derivatives of testosterone, but many of these agents are associated with undesirable side effects. Recent clinical trials suggest that gonadotropin-releasing hormone analogues may be safe and efficacious agents to treat the disease. Continuous, nonpulsatile administration of gonadotropin-releasing hormone creates a distinct hormonal pattern, with an initial rise followed by an inhibition of gonadotropin release. The menopause-like condition brought about by long-term treatment with gonadotropin-releasing hormone analogues induces endometrial atrophy and thus provides a basis for its use in endometriosis. "Hot flashes" are a well-recognized side effect of analogue treatment, and there may be an adverse effect on estrogen-dependent bone density. Although the analogues show promise, comparative studies with other agents used to treat endometriosis-associated infertility will be necessary to determine efficacy. Only one agonist, leuprolide acetate (Lupron), is clinically available and currently approved for treating prostatic carcinoma. It is anticipated that this and additional long-acting agonists will become available in the next two to five years for the therapy of endometriosis.

Although preliminary reports are few, laparoscopic laser ablation for women with moderate to severe endometriosis appears to be as effective as traditional surgical treatment. Advantages of laparoscopy-directed laser or electrocautery are decreased cost and morbidity for appropriate patients. For patients in whom infertility persists after ablative therapy, in vitro fertilization or gamete intrafallopian transfer may be indicated.

Areas of active investigation include assessing abnormal endocrine and immune responses in women with endometriosis, trials of combined medical and surgical therapies, and developing discriminating analyses to evaluate the efficacy of treatment.

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Mammography—The State of the Art

In America, breast cancer will develop in one in ten women, and there will be 42,000 breast cancer deaths in 1988. Despite improvements in surgical techniques and adjunctive therapies, only screening mammography—that is, mammography done for asymptomatic women—has been able to significantly reduce breast cancer mortality thus far.

Breast cancer has been reported to be present two to seven years before detection. Because mammography has a threshold for detectability of around 2 mm, many breast cancers can be detected long before they are palpable. If the lesions are totally in situ and less than 5 mm in diameter, the 20-year survival rate is 93%. The significance to breast cancer mortality can be staggering.

The American Cancer Society's guidelines for mammogaphic screening are as follows:

Ages 35 to 40	Baseline examination
Ages 40 to 50	Annually or biannually, depending on risk
Over 50	Annually

Failing to diagnose cancer is a serious and frequent cause of medical liability. These guidelines have become a standard of care throughout the medical community. In certain states, for example, malpractice insurance companies levy heavy surcharges—$25,000 by one Colorado company—on physicians who do not follow these guidelines, and some attorneys are convinced they will lose any case, regardless of its merit, if the guidelines were not followed.

Despite the good news about early detection with mammography, it should be noted that approximately 10% of breast cancers are missed completely with mammography. Palpable masses, therefore, despite negative mammography results, cannot be ignored and require further workup and diagnosis. In addition, approximately 20% to 30% of questionable lesions found with mammography turn out to be cancer. This specificity may be with special technical advances, such as magnification, improved coned compression, and, perhaps, special grid techniques.

Until recently, the fear that radiation could cause malignant changes made physicians and their patients afraid of routine mammography. With modern equipment, the dose of radiation is 0.1 to 0.5 rads per breast examined. The risk of inducing cancer from this minimal dose is thought to be equivalent to smoking a quarter of a cigarette and, thus, no longer an argument against screening.

It behooves practitioners today to follow the American Cancer Society's guidelines, ascertain the quality of equipment used, and refer patients to interested, competent radiologists.

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Personal Protection Against Sexually Transmitted Diseases

The current epidemic of human immunodeficiency virus (HIV) and other viral sexually transmitted diseases has highlighted the importance of primary prevention of these illnesses. A rapidly growing body of literture has documented several pragmatic strategies.

Behavorial messages should emphasize mutual monogamy, careful selection of sexual partners, and avoiding sexual practices, such as anal intercourse, that may carry increased risks of infection.

Clinical and laboratory studies confirm that using barrier contraceptives and spermicides confers significant protection against acquiring sexually transmitted diseases, especially when used simultaneously—such as a condom plus spermicidal foam. Latex condoms may offer greater protection than natural lamb cecum condoms. The contraceptive sponge recently has been found to protect against infection with the gonococcus and *Chlamydia trachomatis*. Sterilization of men and women provides excellent protection against upper genital tract infections.

Hepatitis B, recently recognized as an important sexually transmitted disease among heterosexuals, is the only one for which there is a safe and effective vaccine. Progress on vaccines against gonococci and HIV has been frustratingly slow.

Postcoital washing or promptly urinating after coitus has not been shown to be effective in reducing the risk of diseases transmitted sexually.

Because the hope for rapid cures of some important sexually transmitted diseases has vanished, persons at risk should modify their sexual behavior and use barrier contraceptives plus spermicides to protect themselves and their partners.

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Chorionic Villi Sampling for First Trimester Prenatal Diagnosis

Over the past five years, transcervical chorionic villi sampling has emerged as an alternative to amniocentesis for women who wish to have a prenatal genetic diagnosis. At present, it is done at more than 100 centers worldwide and more than 32,000 patients have had the procedure. Chorionic villi sampling is 98% successful compared with amniocentesis, which is close to 100% successful. Failures are usually due to difficult catheter placement because of cervical stenosis or uterine fibroids. Although initially popular, endoscopic sampling with forceps has been discontinued in favor of ultrasound-guided aspiration with a thin catheter. The procedure is done by passing a 1-mm flexible catheter through an undilated cervix and then, under ultrasound guidance, advancing the catheter to the implantation site where the chorionic villi are most abundant. Aspiration is done with either a handheld syringe or suction machine.

The advantage of chorionic villi sampling is that it is done between the 9th and 12th weeks of gestation compared with between the 16th and 20th weeks for conventional amniocentesis. Early amniocentesis, which is currently under investigation at several centers, is done between the 12th and 14th weeks. Furthermore, a direct chromosomal analysis of the chorionic villi will yield results in 48 to 72 hours, whereas results from amniocentesis usually require one to two weeks. Because the direct analysis is not foolproof and cannot always exclude fetal chromosomal mosaicism, some of the aspirated villi are placed in culture and analyzed in one to two weeks, similar to the analysis following amniocentesis. Results are available early enough to allow for termination of pregnancy on an outpatient basis and avoidance of midtrimester abortion with its inherent increased risk and emotional distress. A disadvantage of chorionic villi sampling is that since amniotic fluid is not obtained, the α-fetoprotein level in the fluid cannot be determined.

The major concerns of chorionic villi sampling are whether the procedure results in an increased risk of spontaneous abortion, intrauterine infection, or long-term complications such as intrauterine growth retardation. Currently the incidence of spontaneous abortion following the procedure is 3.8%. The reported incidence of pregnancy loss following conventional amniocentesis is between 0.2% and 0.5%. It is important to compare these numbers with the baseline spontaneous abortion rate in control patients who do not undergo chorionic villi sampling. Several authors have reported that this rate is between 2.7% and 6.7% in women between the ages of 35 and 40 years. More than 18,000 infants have been delivered following chorionic villi sampling, and the incidences of long-term complications such as placental disorders, premature labor, chorioamnionitis, intrauterine growth retardation, and fetal anomalies are not increased.

The risk of other complications also appears to be low. Intrauterine infection occurs in less than 1% of cases. There have been four cases of serious infections reported, however, including septic shock resulting in hysterectomy. The incidence of unintentional rupture of the gestational sac is 0.3%. An incorrect diagnosis resulting from contamination of villi with maternal decidual cells occurs in less than 1% of patients.

Chorionic villi sampling appears to be a safe procedure and one that many patients might consider preferable to amniocentesis. Ongoing studies are attempting to further delineate the efficacy and safety of the procedure. One of the avenues of investigation is to randomly assign patients for amniocentesis or chorionic villi sampling to further define the risk of pregnancy loss. Another is the introduction of ultrasound-guided transabdominal chorionic villi sampling, which has the advantage of avoiding possible infection due to vaginal and cervical bacteria. Three European centers have reported on this approach in more than 300 patients, with a pregnancy loss rate of 2.2%.

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The Quality of Medical Evidence: Implications for Quality of Care

DAVID M. EDDY, M.D., Ph.D.,and JOHN BILLINGS, J.D.

To achieve high-quality medical care, we must succeed at three main tasks. First, we must determine just what practices constitute high-quality care. This involves analyzing evidence of the effectiveness, risks, and costs of various medical practices, and designing standards that define appropriate practices.[1] The second task involves monitoring existing practices to compare them against the accepted standards. The third involves changing the behavior of practitioners to ensure that the care actually delivered meets the standards. Failure at any of these tasks will threaten the quality of care people actually receive.

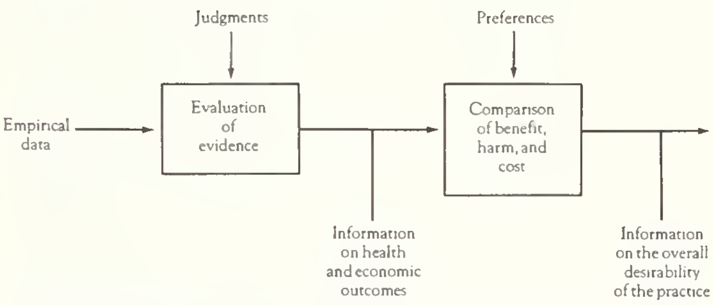
This article examines our current ability to perform the first task. It examines the quality of evidence and the quality of analysis that supports some current standards of practice. It will argue that, for a least some important practices, the existing evidence is of such poor quality that it is virtually impossible to determine even what effect the practice has on patients, much less whether that effect is preferable to the outcomes that would have occurred with other options. Furthermore, whatever the quality of the existing evidence, our current ability to analyze that information is primitive. As a consequence of these two findings, we simply do not know the appropriate standard of care for some medical practices. The care that is currently being delivered might or might not be appropriate. The standards we use to evaluate actual practice may or may not be the correct ones. The article concludes that, to design truly effective quality assurance programs, we must do considerably more work to obtain better evidence about the health and economic effects of different options and to use that evidence in designing appropriate standards of practice. Accomplishing this will require not only specific actions but also a consolidation of leadership, the development of a common vision and set of principles, and coordination and compromises in executing those principles.

The Problem

Determining whether any particular practice is appropriate requires two main steps (Exhibit 1). First, the available empirical evidence must be evaluated to estimate the effect of the practice on health outcomes. (We use the term "health outcome" to describe an outcome of a disease or injury that a person can experience and that effects a person's length or quality of life. Examples are death, pain, anxiety, disability, and disfigurement.) Because the available evidence is never complete, this invariably requires some use of clinical judgment. The second step is to compare the benefit and harm (for example, risks and side effects) of the practice to determine whether, in the eyes of the people who will have to live with the outcomes, the benefit outweighs the harm.

It is also important to estimate the resources required (such as costs) to determine if the health outcomes are worth the resources, and, if resources are limited, to set priorities. This article will focus only on estimating and comparing a practice's health outcomes.

Exhibit 1
Steps In Determining Appropriate Practices


Judgments
Preferences
Empirical data
Evaluation of evidence
Comparison of benefit, harm, and cost
Information on health and economic outcomes
Information on the overall desirability of the practice

Source: D.M. Eddy, Center for Health Policy, Duke University.

The Quality Of Medical Evidence

Ideally, for each practice there will be direct evidence from one or more studies that relates the use of the practice (compared with a specified alternative) to the health outcomes of interest to patients. Types of direct evidence include randomized controlled trials and case-control studies that observe the health outcomes important to patients. The discouraging fact is that the direct evidence that exists can be so poorly designed and reported that it is virtually impossible to estimate from it the effects of a medical practice—how it will change the probabilities or magnitudes of the outcomes that are important to people. The problem is illustrated by an

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examination of the evidence for percutaneous transluminal angioplasty (PTA) and a comparison of PTA with an alternative treatment, bypass surgery.

The literature on PTA was analyzed recently by Raphael Adar, chief of general and vascular surgery at the largest medical center in Israel, during a visit to Duke University's Center for Health Policy Research and Education.[2] He found thirty-nine papers that addressed the use of PTA in the leg. In our experience, this is not unusual; for most of the procedures we research, a large number of papers purport to study its effects. Unfortunately, most of the papers were not useful, which also is not unusual. In this case, twenty-seven had to be excluded for one reason or another, such as mixing the results of treating patients with vascular disease of the leg (the femoral artery or popliteal artery) with the results of patients treated for vascular disease of the pelvis (the iliac artery). These are two distinctly different anatomical locations, and we can expect the effectiveness of treatments to be different in each location. When the results are combined, it is not possible to determine the effectiveness of the procedure for either group of patients.

There is a serious problem with every one of the remaining papers.[3] The worst is that not one study was controlled, much less randomized. That is, in none of the studies were patients randomly assigned to receive either PTA or bypass surgery. Without this, it is virtually impossible to tell what the effectiveness of bypass surgery would have been, or how much better or worse PTA is compared to surgery. A second problem is that more than half the papers mixed the results of PTA for patients treated for different indications. There are two main indications for treatment, and the preferred treatment can be different for patients with different indications. Some patients have pain on walking (intermittent claudication) but can still use their legs. Other patients have such extensive disease that the survival of the leg is threatened, and the main purpose of treatment is to save it ("salvage"). Because the severity of the disease is so different in these two groups of patients, we can expect the outcomes of PTA to be different. By mixing the two types of patients, it is not possible to determine the effectiveness of PTA in either patients with claudication or patients treated for salvage. A third problem is that none of the papers reported the outcomes most important to patients: relief of pain or ability to walk. Rather, they reported "intermediate" outcomes that are easier to measure but that are only indirectly related to the outcomes of real interest to patients—successful opening of the artery ("immediate success"), or how long the artery stays open ("long-term patency"). Fourth, even for these outcomes there was no common format for reporting results. A fifth problem is that none of the papers reported all of the important outcomes. Sixth, even if these problems could somehow be corrected, additional problems would have to be resolved; the studies differed with respect to the types of patients included, the techniques used, the skill of the surgeons and radiologists, and so forth. Finally, an analysis of the literature on bypass surgery does not help. It also consists of uncontrolled studies, with its own list of problems.

The only possible conclusion is that, given the available evidence, there is no way to determine with any degree of accuracy the relative merits of the two approaches. How then do practitioners decide which procedure to use when patients enter their offices? It is impossible to say for certain, but it is clearly not on the basis of empirically based estimates of the effectiveness of the two approaches, because this is unknown. We can only surmise that the procedure chosen might depend on which specialist dominates the decision. A nonsurgeon is likely to choose PTA; a surgeon, bypass surgery.

This example illustrates the type of problems that can exist. The following are clues that the problems might be widespread. (1) The Congressional Office of Technology Assessment has estimated that only 10-20 percent of practices are supported by randomized controlled trials.[4] (2) A review of the statistical methods in published articles concluded that "approximately half the articles that used statistical methods used them incorrectly."[5] (3) A group of published papers about the effectiveness of magnetic resonance imaging (MRI) were scored for quality of design and reporting; on a scale of 1 to 100, the average score was 13.[6] In short, a major problem relating to the first task of a quality assurance program is that for some practices we simply do not have the direct evidence needed to determine the outcomes of the practice.

The Quality Of Analysis

When there is no direct evidence about the effects of a procedure, people who make decisions or design standards must build a case from indirect evidence. They must piece together information about a variety of factors relating to the biology of the disease and the mechanism of action of the intervention. This raises three additional problems. First, analyzing a health problem can require digesting a large number of factors and options—sorting it all out can easily exceed the capability of the unaided human mind. Second, even for a relatively small piece of a problem, there can be many factors. Synthesizing evidence about even these factors can be extremely complicated. Third, the evidence about even one important factor might not be very good.

All three problems are illustrated by screening for colorectal cancer, a disease that causes about 145,000 new cases and 60,000 deaths a year. Many national and international organizations make recommendations about how people should be screened for this disease. Here are some of the factors they must keep in mind: (1) Invasive colorectal cancers can develop from at least two different sources (adenomatous polyps, or more simply adenomas; and de novo). (2) Adenomas and de novo cancers have different natural histories (for example, growth rate, propensity to bleed) and develop in different regions of the intestine in different proportions. (3) There are at least four major types of screening procedures—digital rectal examination, fecal occult blood test (FOBTs), endoscopes (lighted tubes inserted through the rectum), and barium enemas. (4) For three of these types there are several options, with about a dozen brands of FOBTs; rigid or flexible (fiberoptic) endoscopes that come in at least four different lengths; and two basic types of barium enemas (single or double contrast). (5) Each procedure can reach different areas of the large intestine, and has a different sensitivity (probability of finding an existing cancer) and false-positive rate (probability of being positive in a person who does not have cancer). (6) The tests can be used in any combination, at any frequency, starting and stopping at any age. (7) Different strategies can be used for people with different risk factors. And so forth.

To appreciate the complexity of analyzing even one piece of this problem, consider the FOBT. This screening test is based on the fact that occult (or hidden) bleeding found in a stool sample can be an early sign of an invasive cancer or adenoma. The test is usually recommended for people fifty and older on an annual basis; if such recommendations were actually followed, this would represent about 62.5 million applications a year. Clearly, for any procedure intended for 62.5 million people, we want to know how the test will affect important outcomes. In this case, the most important outcomes are how screening with FOBTs will decrease the chance of ever getting colorectal cancer (by finding and removing an adenoma before it becomes an invasive cancer) or decrease the chance of dying of colorectal cancer (by finding an invasive cancer in an earlier stage when treatment might be more effective). No completed controlled trials have yet published direct evidence on these questions, and the recommendations in place today had to be based on indirect evidence.

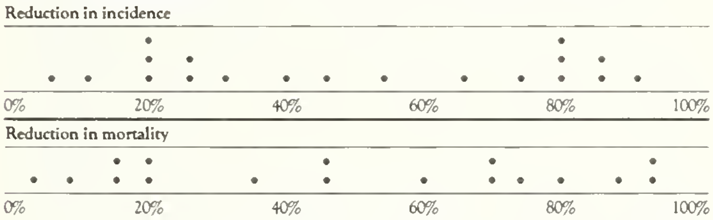
Just what does such evidence look like? Consider one of the questions—how FOBT screening might change the chance an individual will die of colorectal cancer. There are three main factors to be considered: the chance an individual actually has an adenoma or cancer that might possibly be detected; the chance that, if a person has such a lesion, the FOBT will detect it (the sensitivity of the FOBT); and how detecting a lesion through screening (before the onset of sign or symptoms) will affect survival. In turn, each of these factors is affected by additional factors. For example, the probability an asymptomatic individual is harboring an adenoma or cancer is determined by (1) the annual incidence rate, which is a function of the person's age, sex, and risk factors; (2) the growth rates of adenomas and invasive cancers; (3) the time of the last screening examination, if any; and (4) the probability a previous screening examination had a false-negative result (that is, a cancer or adenoma was present but missed).

All of these factors must be considered just to understand the effectiveness of screening with the FOBT. A large number of additional factors must be considered to address other important questions relating to the use of other screening procedures, the choice of an optimal age to start screening, the age to stop screening, the frequency of screening, and the design of differenct protocols for different risk groups.

If this is confusing, that is the point. Synthesizing indirect evidence is extremely complicated. It is neither a surprise nor an insult to say that even when good information is available on all the important factors, putting them together can easily exceed the capacity of the unaided human mind. Mathematical models can be used to structure the existing knowledge and perform the calculations, but the overwhelming majority of problems are analyzed without such models.[7]

Unfortunately, the problem of analyzing indirect evidence is compounded by the fact that we often do not have good information on all the factors. The complexity of the problem and the poor information about various factors leads to what you would expect. There is an extremely broad range of uncertainty about the actual impact of colorectal cancer screening on the most important outcomes, whether someone will get colorectal cancer, and if they get it, whether they will die from the disease. A group of international experts that met periodically to review the evidence and design screening policies was asked to estimate how the policies would affect the chance an individual would get or die from the disease. The range of answers for a particular policy (annual FOBT and flexible sigmoidoscopy) could hardly be more broad, some experts believing the screening strategy would virtually eliminate the disease (reducing mortality 95 percent), others believing it would have virtually no effect at all (reducing mortality only 5 percent) (Exhibit 2).[8] This example is not presented to embarrass experts; it simply indicates how the complexity of a medical problem, and the lack of good information on the basic factors needed to solve the problem, can leave us with virtually no understanding of the magnitude of the impact of a procedure on even the most important outcomes.

Exhibit 2
Effect Of Screening: Annual Fecal Occult Blood Test And Annual Flexible Scope



The difficulty of processing the numbers of probabilities important to medical reasoning is indicated by more formal studies, even for very simplified problems. Some examples follow.

A group of practicing physicians was surveyed to assess their knowledge of statistical and logical skills considered necessary for interpreting the medical literature.[9] The survey indicated the physicians had a poor understanding of commonly used terms (scoring just more than 50 on a scale of 0 to 100 in ability to define basic terms such as "false positive/negative rates," "prevalance," "incidence," and "p values") and were unfamiliar with important principles of inference or logic answering correctly only about 25 percent of the questions about the importance of sample size, the effect of pretest probability on the predictive value of test results, and so forth).[10]

Medical students, residents, and attending physicians at several teaching hospitals were given the following hypothetical problem: "If a test to detect a disease whose prevalence is 1/1000 has a false-positive rate of 5 percent, what is the chance that a person found to have a positive result actually has the disease, assuming you know nothing about the person's symptoms or signs?" Only 18 percent gave the correct answer (about a 2 percent chance). The average answer overestimated the likelihood of disease by a factor of 30.[11]

Physicians were asked to interpret a negative computerized tomographic (CT) scan of the brain for a patient with lung cancer who was having brief reversible strokes due to reduced blood supply to the brain (transient ischemic attacks). The question presented was whether the strokes were caused by spread of the cancer or by an underlying disease of the blood vessels supplying the brain (cerebrovascular disease). A conclusion predicted by quantitative analysis indicated that the chance the symptoms were caused by spread of cancer to the brain was 98 percent. However, almost two-thirds of the physicians surveyed estimated that chance to be less than 25 percent, and only three of the forty-four physicians estimated the chance to be greater than 75 percent. An autopsy confirmed the cancer had spread to the brain.[12]

A group of 124 physicians was given seven written case descriptions and asked to estimate the probabilities of specific diagnoses or clinical outcomes. For each question asked about the case, the physicians' estimates varied widely, the smallest range being 80 percent (ranging from 2 percent to 82 percent). For four of the cases, the range of estimates exceeded 90 percent.[13]

Evidence on preferences

The available information on patient preferences is even less complete. A handfull of researchers in medical decision making and psychology have documented the importance and variability of patient preferences relating to a very small number of health problems.[14] However, we have virtually no systematic understanding of how people value different types of health outcomes. For example, consider a possible policy to screen women from age forty to fifty with annual mammograms and breast examinations. To our knowledge, no one has ever asked forty-year-old women how they compare (1) reducing their chance of dying of breast cancer that might occur in that age decade from 50 in 10,000 (without screening) to 30 in 10,000 (with screening for ten years)—a reduction of 40 percent—versus (2) a 2 percent chance each year of a false-positive test result leading to a breast biopsy, a one in a million chance of the radiation causing a new case of breast cancer, and a bill for the mammogram and breast examination ranging from about $350 to $1,700 (that is, $40 to $200 per examination for ten years, discounted). It is simply not a standard practice to present the outcomes of different choices to people, and ask their preferences.

Implications

The inescapable conclusion is that some practice standards are created without knowledge of the actual impact of the practice on health and economic outcomes and without knowledge of how people would compare the benefit and harm. This conclusion has two corollaries. First, for some current practices, decisions and standards must be based on a logic that does not use information on the magnitude of their benefit and harm, because that information is not available. Second, to the extent that patients and physicians would choose different practices if they were better informed, current practices and standards might not be appropriate.

On the first point, the reasoning used to support many clinical decisions and standards appears to be much simpler than described above. The logic appears to be that a practice will be considered appropriate if it *might* have benefit. For convenience, we will call this the criterion of potential benefit. This criterion is tempting for several reasons. Because it does not require estimation of the magnitude of benefit or explicit comparison of benefit and harm, it is very easy to apply. It also deals quite smoothly with the uncertainty that surrounds many practices. One can be quite uncertain about whether a practice has benefit, and, if it does, the magnitude of any benefit, and still conclude that it *might* have benefit. This criterion translates easily into "when in doubt, do it."

What harm is done

The criterion of potential benefit works well for practices for which the benefit is so obvious and great and the harm (and cost) is so small that no formal trials or sophisticated analyses are needed to appreciate their roles. The rabies vaccine is a good example—a person infected by rabies will live with the vaccine and will die without the vaccine. We do not have to conduct a randomized trial to prove this or conduct a scientific survey to conclude that virtually everyone would consider the treatment worth the pain of the shots.

However, the criterion of potential benefit has at least five problems. First, it does not work for decisions or standards about practices for which the benefit does not obviously outweigh the harm. Furthermore, the criterion of potential benefit has the insidious quality of not alerting us when the benefit might not outweigh the harm, because it does not require careful examination of the evidence and examination of the benefit and harm. It is easy to overestimate the benefit and underestimate the harm, perhaps due to optimism and wishful thinking. To the extent that we are promoting practices for which the benefit is small (or nonexistent) compared to the harm, we are doing harm.

Second, the criterion of potential benefit does not work when we must choose between competing practices. For example, a patient suffering from vascular disease in the legs can be treated by PTA or bypass. Both might cause benefit, which explains why each procedure has its advocates. However, the criterion of potential benefit provides no basis for choosing between them. To the extent that an explicit examination of outcomes of the two procedures would lead to a clear preference, and to the extent the nonpreferred practice is being used, harm is being done.

Third, the criterion of potential benefit drives up costs. If we attempt to do everything that might have benefit, and if we always resolve uncertainty in favor of potential benefit, we can end up performing and paying for practices that have little or no value.

Fourth, the criterion of potential benefit leaves us helpless when resources are limited and difficult choices must be made. The harm caused by this is inefficiency. Failure to give priority to practices that deliver the greatest health benefit for the resources can result in a net loss of benefit compared with what could potentially be gained with a more efficient allocation of resources.

The fifth problem is that use of the criterion of potential benefit can cause us to overestimate our knowledge. If the criterion of potential benefit is used, we can easily have enough knowledge to make decisions without in fact knowing very much.

Why do we not have better evidence?

First, it should be recognized that collecting good evidence can be extremely difficult, even with the best planning. For example, it is clearly not possible to answer all clinical questions with randomized controlled trials. For some questions, the infrequency of the outcomes (requiring large sample sizes), the long natural histories of the diseases (requiring long follow-up periods), rapid changes in practices (sometimes invalidating results before completion), variations across patients, and high costs, can all conspire to make a randomized controlled trial impossible or useless. Nonetheless, many questions can be examined with randomized controlled trials, and for those that cannot, there are other designs that could yield considerably better information than is now available. For example, PTA and bypass surgery could be studied by controlled trials. Thus it is still reasonable to ask why the available evidence is not better than currently exists.

There are two basic reasons: practitioners and policymakers do not demand better evidence, and many clinical researchers do not have incentives to produce it. On the first point, practitioners who use the criterion of potential benefit have little need for better evidence; they can set standards without ever estimating the effect of the contemplated practice on health outcomes. This in turn removes the major incentive to demand good evidence. On the second point, clinical researchers often lack the incentives to produce results useful for estimating the impact of a practice. To appreciate how this can occur, consider why there are more than three dozen clinical series on PTA but no studies that answer the important clinical question of how PTA compares with bypass surgery. When designing, conducting, and reporting research, the investigator has several goals. One goal is to learn more about PTA. But other goals might be to get a publication, get promotion or tenure in a medical school, be recognized and a "pioneer" in the use of PTA, be invited to conferences, and so forth.

How Do We Get Better Evidence?

Getting better evidence will be very difficult. Not only will it require considerable effort and money, it also will require changes in perceptions and deeply held traditions. The basic approach to getting better evidence follows from the basic reasons we do not have good evidence now—we must demand better evidence and create incentives for researchers to produce it. Some of the actions required to accomplish this are: promoting programs to examine practices; increasing coordination of research; requiring higher standards for publication; and requiring higher standards for policies.

Promote programs to examine practices

Formal examination of practices is best accomplished through programs to design practice standards and coverage policies. Specialty societies and large groups (for example, health maintenance organizations, or HMOs) can lead the effort to design practice standards. Third-party payers and purchasers can provide leadership in designing coverage policies. In all cases there should be a commitment to three things. First, the policies should be based on evidence, not group opinion, expert testimony, or "a wide-spread consensus." Second, the analysis should estimate explicitly the magnitudes of the effects of different options on the important health and economic outcomes. The analysis should not be based on the mere finding that a practice might have benefit (the criterion of potential benefit). Third, the policy statement should contain the estimates of the outcomes, in addition to the conclusion (for example, the practice recommendation or coverage policy). A good strategy is to separate the estimation of outcomes from the value judgments about those outcomes. First list the health outcomes affected by the practice, then estimate the effect of the practice on each health outcome, and then make the value judgments based on the estimated effects of practice. Over the long run, this approach will force us to examine the evidence supporting each practice, which in turn will stimulate better research. Immediate benefits are that it will help us understand the effects of what we are doing and put us in a better position to choose between practices.

Increase coordination of research

Health care research today is highly decentralized. By and large, each investigator conceives, designs, conducts, and reports the research as he or she chooses—subject only to availability of funding and potential for publication. Whatever this approach might gain in creativity, it loses in impact; the results frequently are not useful for clinical decisions. Great gains could be made by setting priorities for clinical research, tying research to decisions, and increasing coordination between researchers (for example, agree on common patient selection criteria, definitions, follow-up times, and reporting methods).

Higher standards for publication

Standards for publication in the handful of best journals are already tight (although they can be tightened further). However, a far more pressing problem is to achieve tighter standards for the second-line journals. There are two main goals. One is well recognized: to ensure that any study published is well designed, conducted, analyzed, and reported. The other goal, less well achieved, is to increase the usefulness of published studies for making clinical decisions. This requires not only that the study's designs be internally sound, but also that it be motivated by the practical questions and that the information it provides can be tightly fitted with the results of other studies. Somehow, if a study's results are to be useful, they must be integrated with existing knowledge and other research. This integration should be addressed before the study is designed, not after. If publication of nonuseful reports were made difficult, researchers would move quickly to improve the usefulness of their work. Journal editors can lead this task.

Higher standards for standards

Immense care can go into designing a health technology and collecting evidence about its effectiveness; yet there are almost no standards for what individuals and organizations can say about its appropriate use. The result is a strong tendency to take the easy route, which does not require careful evaluation of the evidence or explicit estimation of the consequences of different options. To force a more careful evaluation of the existing evidence and increase demand for better evidence, we must tighten the "standards for standards."

Leadership

Who decides if the problems described in this article are real and serious? Who decides if these or other suggestions are reasonable? Who has the authority or the resources for implementing whatever is agreed on? Who is accountable fifteen years from now if no progress has been made? A basic fact of the American health care system is that there are no good answers to these questions. This is because our system does not have a leader; it has dozens—each with different but overlapping domains and interests. Furthermore, these is no mechanism for both developing and executing a common vision.

To improve the quality of evidence, we must either change the system to create such a mechanism. Or the current leaders of the system must coalesce around this issue. However it is accomplished, we must all agree on the principles that should guide our health care system, on any discrepancies between the principles and our actions, on the steps we need to correct those discrepancies, and on the sacrifices and compromises we must make to put our principles into operation. Until this is achieved, our progress toward improving the quality of evidence, the quality of standards, and the quality of the health care people actually receive, will be mixed, and slow.

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Getting to Know and Love Your PRO

EDWARD A. KAMENS, M.D.

HAVING passed legislation in 1983 mandating a Medicare prospective reimbursement system, the Congress of the United States was confronted with the obligation of assigning to someone the task of coping with the aberrations created by the new system. That someone, as you know, is the Peer Review Organization (PRO).

By establishing and structuring the PRO in a radically different fashion from that of the old PSRO, the Congress laid the groundwork for a classical love-hate relationship between the reviewers and the reviewees. The saving grace in the entire concept was the opportunity afforded physicians to have an effect on the process and to make the professional determinations.

Regretably, no national unanimity emerged within the profession as to how to deal with this opportunity. In some states, anger, frustration, resentment, and outright obstructionism was the response to the imposition of a system that physicians could not agree was even needed. The results in such states were for a time inimical to the best interests of the physicians and, therefore, the full potential for true peer review was not always achieved.

Those states, such as Connecticut, where organized medical leadership acted to seize the opportunity to play an important role in the process, were able to provide the physicians of their states options that to this day may not be fully appreciated.

Structure and Influence

In those states where physicians took unified action, they were able to establish the organizational structure, bylaws, and processes that gave all physicians voting and representational rights, which in turn were reflected in the membership of the PRO Board of Directors.

This permitted a thorough airing of physicians' points of view at the highest level and provided a means to establish policies based on concern for patients and on sound medical judgment.

Physician Input

The physician-sponsored peer review organizations emphasized maintaining open lines of communication with the organized professional structure already in place. Input from specialty groups was aggressively sought and PRO committee structure was designed to reflect geographic and physician specialty areas.

This input was invaluable in developing the criteria for review. Reason and persuasion were brought to bear in coping successfully with well-meaning but inflexible guidelines.

Due Process in the System

With significant physician involvement in the physician-sponsored PRO, credibility was added to the regulatory aspects of the peer review process. A great deal of effort went into assuring that compliance with the regulatory aspects of the review process did not mean abrogation of physician rights. Connecticut was a leader in establishing and preserving due process procedures which were later generally accepted.

Is There Justification For All This Activity

The perverse incentives in a prospective payment system make it mandatory to develop a system of caring oversight that assures compliance with fiscal restraint measures while at the same time preserving quality of care.

Setting resentment and anger aside, some method for measuring the impact of the cost-cutting effort was essential for the assessment of the effects of the radical changes taking place.

Have the Changes Been Cost Effective?

The bottom-line argument remains open. Certainly a reduction in the number of hospital admissions has taken place in the face of a previous utilization rate that was rising at 4-5% per year.

Almost certainly, some of the economies achieved by a reduction in admissions have been offset by:

- oversight program costs
- increasing cost of ambulatory procedures as a result of volume increases
- increasing cost of outside societal support systems required by a reduction in the use of the hospital as a societal support system.

Finally, some of the indirect costs of the changes in the system may not be readily subject to fiscal computation.

What About the Bottom Line on Quality in Connecticut?

Quality of care objectives (catheter, antibiotic use, reduction in avoidable post-trauma death) were all met in the first contract period. Follow-up of these objectives shows maintenance of the improvement in the second contract period.

A recent CPRO survey of 1,550 patients who had been readmitted within 15 days of discharge disclosed that

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1.35% of these (21 cases) were classified as readmissions due to premature discharge.

Since there are no similar data prior to the onset of the PPS system, it is difficult to draw a specific conclusion about the causal effect of PPS on premature discharge other than to make two valid assumptions:

1. Some unknown, perhaps similar number of premature discharges took place before the PPS was put into effect; and sure to discharge patients early, are apparently using excellent clinical judgment in making discharge determinations.

The data emerging from generic screening and the evaluation of cases on the basis of the existence of an error or delay in diagnosis or treatment are downright supportive of Franklin Roosevelt's contention that the only thing we have to fear is fear itself.

No better case could be made for physician support of their own PRO than the emergence of our data which confirm the high quality of the care delivered to the Medicare population in this state.

Some data of general interest before focusing on quality of care:

1. In the year before the CPRO became operational, there were approximately 138,000 Medicare admissions to Connecticut hospitals and the annual increase in Medicare admissions was between 4% and 5%. In 1987, there were 119,875 Medicare admissions to Connecticut hospitals.

2. During the nine-month period that CPRO conducted its preadmission certification program, the denial rate was 2.2%. After removal of the precertification program the denial rate rose to 3.3%. This increase in the denial rate is estimated to have cost Connecticut hospitals approximately $2.5 million in denied payments.

Quality of Care Findings:

CPRO's initial review for quality of care is based on physician developed generic screens.

Failure to meet a generic screen, with minor exceptions, requires a reviewing physician to make a determination as to whether or not a quality-of-care question should be addressed to the attending physician. No final determination is made until the attending physician has had an opportunity to respond to the question raised.

These screens encompass such topics as:

1. Adequate discharge planning
2. Medical stability of the patient at the time of discharge
3. Unexpected deaths
4. Nosocomial infections
5. Unscheduled returns to the OR
6. Hospital trauma: falls, reactions, iatrogenesis
7. Any question relative to diagnostic or treatment error or delay.

Confirmed issues are then assigned to one of the severity levels discussed below.

Level 1 - An issue with very little potential for patient injury, or at most, a minor problem (most frequently, these are documentation problems).

Level 2 - A potential problem with no adverse effect. (For example, a medication error with no adverse effect, a nosocomial infection which is recognized and treated early with rapid response).

Level 3 - An adverse occurrence with significant potential for patient injury which is detected, treated, and responds effectively (usually within 24-48 hours) with no significant sequela. (For example, a patient who is documented as having an allergy to penicillin is given penicillin, has a reaction, and responds to early treatment).

Level 4 - An adverse occurrence with a significant increase in the use of hospital resources. (For example, an increased length of stay, secondary procedures, a readmission due to a premature discharge, need for specialty units or other support mechanisms.) Of particular concern are cases in which death or permanent disability has occurred.

In looking at the following data it is important to keep in mind that the term "confirmed quality of care issue" implies that in the opinion of the physicians conducting the multiple layers of review there was agreement, after information from the attending physician, on the inappropriateness of the care given. This is especially important in cases of severity levels 3 and 4.

It should be noted that the nosocomial infection screen is identified with (**) because it triggers occurrences which may not be the result of inappropriate care but suggest the need for further evaluation of care.

Summary of Quality of Care Issues Finalized During 1987:

Total - Cases Reviewed for Q/C — 22,221

Total - Quality of Care Issues — 2,635 (8.4%)

Level	*Number of Issues*	*Percent of Total*
1	675	25.6%
2	1,903**	72.2%
3	37	1.4%
4	20	0.8%
Total	2,635	100.0%

** Includes nosocomial infections appropriately diagnosed and treated

An extrapolation of these data for all 119, 875 Medicare admissions to hospitals in Connecticut for 1987 would suggest the potential for a total of 10,070 quality of care issues. This would yield approximately:

2,578	Level 1	Confirmed issues
7,271	Level 2	Confirmed issues
141	Level 3	Confirmed issues
80	Level 4	Confirmed issues

It is clear, therefore, that while the data confirmed the excellence of the care given by physicians in our state, it also suggests that, by constantly striving to improve our personal performance and the performance of our hospital system, we can do even better.

Review at What Price?

There can be little doubt that implementation of the PPS system has resulted not only in an overall reduction in the number of hospital admissions but also in a significant reduction in average length of hospital stay.

The influence it has exerted on promoting new hospital management systems and the threat it has posed to the fiscal integrity of some hospitals is well documented. Less well documented is the effect it has on those intangible benefits to which patients were accustomed when the hospital existed as a major support system in the continuum of patient care.

Despite the best efforts at establishing support systems from VNA, Home Health Agencies, volunteer groups, etc., there is little doubt that patients perceive that they are being discharged prematurely from hospitals, even though the data suggest that they no longer need hospital care but rather should have another level of care (home health, SNF).

What also becomes evident is the cost-shifting required to pay for this additional external support system and the emerging harsh reality that there is little hope at present of finding enough funds to provide that support for all of those who cannot afford it.

Value of Continuing

There are many reasons why there is value in continuing an objective and independent review process.

- There is and continues to be intrinsic value in the heightened general awareness of focusing on quality of care in the review process.
- With so much emphasis being placed on cost containment, it is important to document that the quality of care continues to be good.
- Despite the excellence of care and the sophistication of the delivery system in our state, there is still room for improvement.
- Continuing the present system of oversight provides data that permit focusing on specific areas which can be improved. CPRO has put into effect over 150 action plans to date, all of them resulting in improved care.
- Although the sanction process was initiated in several instances, the problems were resolved without having to carry the process to its conclusion.

Helpful Hints

In keeping with the goal of excellence, our findings suggest the need to emphasize the following:

1. Since a 10% rate of disparity still exists in DRG assignment, it is vitally important that physicians:
    a. Examine discharge face sheets carefully before they attest to the clinical material on the face sheet;
    b. Be familiar with the definition of *principal diagnosis* and ascertain that the DRG is based on the principal diagnosis;
    c. Be familiar with appropriate sequencing in coding conventions so that the acute process is highlighted—it has preference over the chronic condition;
    d. Communicate freely with their medical record departments and ask for their assistance if they have any questions.
2. Since physicians state that they feel pressured at times to discharge patients, they should be aware that if they disagree with a hospital Utilization Review Committee denial, they (or the patient) may request immediate review by CPRO. The review is not based on DRG days but on the severity of the patient's illness and whether or not the services required and received are hospital level of care.
3. Since a significant number of quality-of-care questions are raised because of a failure to document in the medical record or because of contradictory documentation, efforts to improve the nature of the documentation and its accuracy would significantly reduce some of these problems. The most frequent documentation problems are:
    a. Failure to address abnormal findings at the time of discharge or failure to document that office follow-up will be performed.
    b. Disparity between physician, resident, and nursing notes, and the question of whether or not the attending was aware of findings or assumed responsibility for ascertaining certain findings.
    c. Failure to document the patient's insistence on going home or signing out against medical advice.
    d. Failure to document what approach to treatment is or is not acceptable to patient and family in support of a dying patient.
    e. Failure to document the rationale for not undertaking recognized therapy.
    f. Failure by the covering physician to document appropriate continuum of care.
4. Since a significant number of problems emerged with a potential for adverse effects resulting from a systems failure to follow up on reports of tests, x-rays, or interpretations, an effort to review hospital systems performance is in order.
5. Since over two-thirds of the significant adverse effects resulting from delay in diagnosis or treatment were attributed to errors in judgment, hospital educational efforts should be directed toward self-evaluation, emphasizing self-discipline, interpersonal and interprofessional communication, and the importance of maximizing cognitive skills, showing how this knowledge may be applied to solving problems in all the hospital systems.

While the federally imposed system for Medicare review was not sought by physicians, there are at least some positive elements for both physicians and patients that can be beneficial if they help to confirm and to maintain the high quality of care we all desire.

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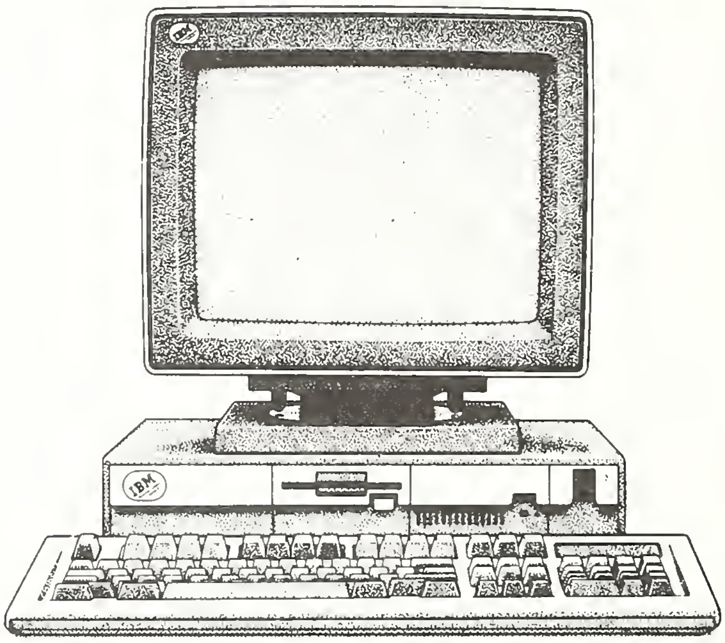

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DRUG INFORMATION UPDATE: HARTFORD HOSPITAL

Buprenorphine

CHERYL LOBER, R.Ph.

Buprenorphine (Buprenex®), Norwich Eaton is a synthetic agonist-antagonist opioid available in the United States in injectable form for parenteral treatment of moderate to severe pain.

Pharmacology and Pharmacokinetics

Buprenorphine is a highly lipophilic opioid derived from thebaine. This drug, together with butorphanol and nalbuphine are mixed agonist-antagonists which are effective analgesics with less abuse potential than the agonists morphine and codeine.[1] The dual properties of the agonist-antagonists are explained by their varying actions at the postulated three types of opioid receptors (mu, kappa, and sigma).

The mu receptor mediates supraspinal analgesia, euphoria, respiratory depression, and physical dependency. The kappa receptor mediates spinal analgesia, sedation, miosis, and possible respiratory depression. Activation of the sigma receptor causes dysphoria and hallucinations, as well as respiratory and vasomotor stimulatory effects. The following table details drug activity at these receptors:

OPIOID RECEPTOR TYPES

Drug	*Mu*	*Kappa*	*Sigma*
buprenorphine	partial agonist	unknown	no significant action
butorphanol	antagonist	agonist	agonist
morphine	agonist	agonist	no significant action
nalbuphine	antagonist	agonist	agonist
naloxone	antagonist	antagonist	antagonist
pentazocine	antagonist	agonist	agonist

Buprenorphine is also being studied for the treatment of narcotic withdrawal syndrome. It has been found that termination of maintenance with buprenorphine does not result in severe and immediate prolonged withdrawal signs and symptoms as with methadone.[2] Buprenorphine kinetics show a decline in agonist activity at higher doses along with a transformation of that activity into primarily one of the antagonist quality.[3,4] Consequently, an increase in the dose above that which causes an analgesic response produces a narcotic antagonist response that can be prolonged for approximately 30 hours and is equipotent to that of naloxone.[5,6] The bioavailability of buprenorphine after IM injection is reported to be 90-100%.[7] A dosage of 0.3mg IM has an onset of analgesia of 15 minutes with peak effects occurring within one hour. Therapeutic and toxic blood levels have yet to be established. The half-life of buprenorphine is approximately three hours but there is little correlation between half-life and duration of analgesic effects. Buprenorphine is metabolized in the liver and clearance of the drug is dependent upon hepatic blood flow.[8] Both N-dealkylated and conjugated metabolites are detected in the urine (27%) but the majority of the drug is excreted unchanged in the feces (68%).[6]

Clinical Studies

Several studies have reported the efficacy of buprenorphine as a postoperative analgesic in a variety of surgical procedures. Harcus et al (1980) evaluated 7,548 patients who received doses of 0.3-0.6mg IM in the immediate postoperative period for moderate to severe pain. Adequate analgesia was reported in 92% and 89% of the patients at two and four hours respectively. Similar efficacy was reported with repeated administration.[9] Budd evaluated high-dose buprenorphine for postoperative analgesia following caesarean sections in 50 patients. Doses of 0.2mg IV were repeatedly administered over a 3-15 minute period until the patient was pain free. The mean duration of analgesia was 14.2 hours at all dosages ranging between 0.4-0.7mg.[10] In both studies adverse reactions were minimal, being limited to drowsiness despite the high dosages of buprenorphine. Harcus et al reported less than 1% of the patients experiencing respiratory depression.[9]

In comparison to morphine, buprenorphine is 20-50 times as potent,[11,12] but data reporting the duration of

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action of these two agents is inconclusive.[13,14] Intramuscular buprenorphine 0.3mg is equianalgesic to 10mg of morphine. The duration of action at this dose has been reported to be ten hours as compared to six hours with morphine.[13] However, other data have suggested a similar duration of action with both agents.[14] The onset of analgesia with both agents appears to be similar.[11]

Studies with meperidine showed that 1-2mg/kg of meperidine is approximately equivalent to 4-8mcg/kg buprenorphine IM in postoperative pain, although buprenorphine is 600 times as potent as meperidine.[11,15] However, evidence exists that in gynecological surgery there is a higher incidence of drowsiness in patients treated with buprenorphine than with meperidine.[6,16,17]

Adverse Reactions

Although buprenorphine has increased potency over other opioids, the side effects appear to be no greater. The morphine-like effects produced by buprenorphine include decreased systolic blood pressure, heart rate, stroke volume, and constriction of the pupils.[6,15] Hypotension reportedly occurs in one to five percent of the patients and hypertension, tachycardia, or bradycardia occur in less than one percent of the patients.[18]

There are varying reports concerning the occurrence of respiratory depression. Studies have shown some degree of dose-dependent respiratory depression to the same extent as morphine.[8,19] There is apparently no complete specific antagonist for buprenorpine's respiratory depressant effect, even very high doses (2.4-16mg) of the antagonist naloxone may produce only a partial reversal of the depression.[6] However, in clinical practice, respiratory depression has not been a problem and when respiratory depression has occurred both naloxone in usual doses and respiratory stimulant drugs (ie, doxapram) have been used successfully in these patients.[6] Minor adverse reaction of buprenorphine include vomiting, nausea, headache, sweating, and dizziness, all occurring with varying frequency.[8]

Drug Interactions

Buprenorphine shares the same drug interactions commonly associated with opioid analgesics. Caution should be exercised when used in combination with MAO inhibitors and other CNS depressant drugs. Respiratory and cardiovascular collapse occurred in one patient receiving therapeutic doses of buprenorphine and diazepam. There was one report of purpuria occurring when buprenorphine and phenprocoumon (coumarin derivative) were given concomitantly. Administration of buprenorphine after halothane anesthesia can result in reduced clearance of buprenorphine due to decreased hepatic blood flow.[8]

Dosage and Administration

Buprenorphine should be administered with caution in the elderly in whom usual doses are associated with a higher degree of confusion, drowsiness, and sweating that in younger patients.[20] Because buprenorphine is metabolized in the liver, the activity of the drug may be prolonged in those individuals with impaired hepatic function.[8] No current data are available for dosing in renal failure. Administration of buprenorphine to patients already receiving large doses of narcotic analgesics should be monitored since the possibility exists for precipitated abstinence as a result of the drug's antagonistic properties.[2]

Buprenorphine is a Schedule V controlled substance with no sulfite preservatives and is available in ampules of 0.3mg/ml for parenteral use only. The recommended dosage is 0.3-0.6mg by intramuscular or slow intravenous injection, repeated every six to eight hours as required.[8]

Cost Comparison

Equianalgesic IM dose	*Cost to Pharmacy*
Buprenorphine 0.3 mg	$1.08
Butorphanol 2 mg	2.08
Meperidine 75 mg	.34
Morphine 10 mg	.82
Nalbuphine 10 mg	.66

Summary

Buprenorphine is a synthetic agonist/antagonist opioid shown to be as effective as equianalgesic doses of morphine for parenteral treatment of moderate to severe pain. The major advantage of this drug for use in analgesia is its potential extended duration of action and lower physical dependence liability over other agents.

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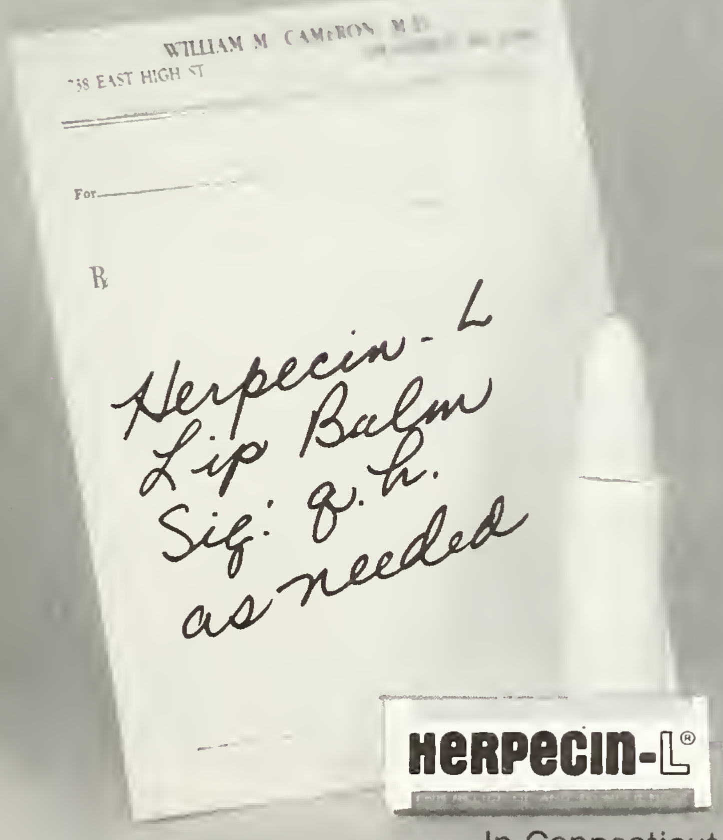
Dx: recurrent herpes labialis



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Premature Mortality by Income Level—Multnomah County, Oregon, 1976-1984

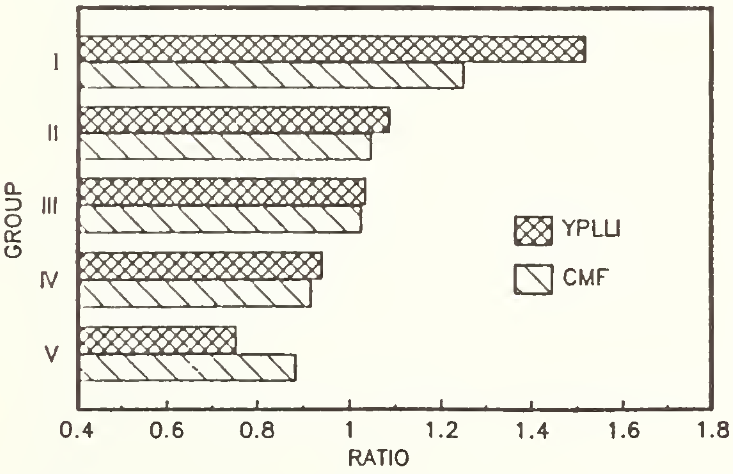
CENTERS FOR DISEASE CONTROL

Health status is difficult to assess because of the heterogeneous nature of populations. To alleviate this problem, officials in Oregon analyzed premature mortality in relation to median household income by census tracts and focused on one racial group. Multnomah County was chosen as the study area because it contains 21% of the state's population and includes Portland, Oregon's largest city. During the study period, 1976-1984, a total of 48,012 white residents of Multnomah County died. These deaths resulted in 303,084 years of potential life lost (YPLL) before 70 years of age.*

Comparative mortality figures (CMF), years of potential life lost indices (YPLLI), and YPLL were calculated for census tracts grouped by median income quintile. The CMF is the ratio of the age-adjusted mortality rate for an income group to the rate for all groups combined. The YPLLI is the ratio of the age-adjusted YPLL rate for an income group to that for all groups. The age adjustment for CMF was calculated by a direct method, and that for YPLLI, by an indirect method.[1] In the poorest quintile (Group I) median household income was less than $12,100, and, in the wealthiest quintile (Group V), it was greater than $19,300.

An inverse relationship existed between income levels and the measures of mortality (CMF and YPLLI) due to all causes of death† (Figure 1). For the causes of deaths listed in Table 1, residents of the poorest census tracts (Group I) consistently had the highest mortality, and the wealthiest (Group V) had the lowest. YPLLI differed more between income levels than did CMF. The YPLLI exceeded the CMF by the greatest amount in the lowest income quintile; thus, the greatest excess in premature mortality occurred in this group.

Among the leading causes of death listed in Table 1, the disparity in mortality among income groups is greatest for alcoholism. The YPLLI and CMF decreased in each successive income quintile from Group I to Group V. The YPLLI for alcoholism was 11.7 times higher for Group I than for Group V. Previous studies have shown increased levels of alcohol abuse among persons with low income.[4] Others have suggested that alcohol-related diseases are less likely to be reported on the death certificates of persons with higher incomes. The Oregon Center for Health Statistics queries certifying physicians regarding the deaths of any persons for whom the cause of death was suggestive of alcohol abuse (e.g., liver cirrhosis).[5] In 1984, Oregon's mortality rate for all liver disease and cirrhosis (ICD-9 571.0-571.9) was slightly higher (12.0/100,000 population) than that for the United States as a whole (11.6/100,000), but the mortality rate for alcoholic liver disease and cirrhosis (ICD-9 571.0-571.3) was twice as high (9.8 compared with 4.8). In 1984, 82% of all liver disease and deaths from cirrhosis in Oregon were reported to be alcohol-related; this was the highest percentage for any state.



*Group I is the lowest income quintile; Group V is the highest.

FIGURE 1

Comparative mortality figures (CMF) and years of potential life lost indices (YPLLI) for all causes of death, by income groups*—Multnomah County, Oregon, 1976-1984.

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* Seventy years of age was used as the base for YPLL calculations in conformance with recommendations of the National Center for Health Statistics.[1]

† The International Classification of Diseases (ICD), Eighth Revision Adapted, was used to classify the underlying causes of death during the period 1976-1978.[2] The ICD, Ninth Revision, was used for the period 1979-1984.[3]

Morbidity and Mortality Weekly Reports, Vol. 37, Nos. 7, 10 and 12, 1988.

Chronic obstructive pulmonary disease (COPD), the fifth leading cause of death and the ninth leading cause of YPLL, caused the second greatest disparity in mortality among income groups. The YPLLI for COPD was highest for Group I and lowest for Group V; the difference between the two groups was fourfold.

For unintentional injuries, Group I had the highest YPLLI, 1.2 times that of Group V. However, this finding masked a substantial difference in YPLLI for nonmotor vehicle-related unintentional injury (ICD-9 E826-E949); the YPLLI for the poorest quintile was 1.7 times that for the wealthiest. Both groups had similar YPLLI for motor vehicle-related unintentional injuries.

Reported by: DD Hopkins, MS, JA Grant-Worley, MS, KL Stebbins, LN Wright, MD, JE Gordon, PhD, LR Foster, MD, State Epidemiologist, Oregon Health Div. Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office, CDC.

Editorial Note: Years of potential life lost is a measure of mortality that emphasizes causes of death that are important at ages under an arbitrary cut-off, 70 years in this study. A recent study in West Virginia[6] found that crude YPLL rates were higher in counties with low per capita income. The Multnomah County data demonstrate a large variation in premature mortality by economic status in a major metropolitan area. Census tracts are often more homogeneous than counties, and studies based on them may yield a more definitive picture of the relationship between mortality and income. The high rates of premature mortality found in low income areas, in particular, provide direction for public health prevention efforts.

Table I

Years of potential life lost (YPLL), years of potential life lost index (YPLLI), number of deaths, and comparative mortality figures (CMF) for selected causes of death, by lowest and highest income quintiles* — Multnomah County, Oregon, 1976-1984

		YPLLI			*CMF*	
Cause of Death	*YPLL*	*Group I*	*Group V*	*No. of Deaths*	*Group I*	*Group V*
Total for All Causes	303,084	1.5†	0.8†	48,012	1.3†	0.9†
Unintentional Injuries	56,398	1.1	0.9†	2,163	1.2†	0.9†
Malignant Neoplasms	56,067	1.2†	0.8†	10,142	1.1†	0.9†
Heart Disease	44,261	1.6†	0.7†	17,288	1.2†	0.9†
Early Infancy	23,310	1.4	0.8	336	1.4	0.8
Suicide	21,000	1.6†	0.8†	817	1.6†	0.8†
Congenital Anomalies	14,652	1.2	0.9	269	1.1	0.9
Alcoholism§	13,180	3.5†	0.3†	1,185	3.1†	0.4†
Cerebrovascular Disease	6,848	1.2	0.7†	4,700	1.1†	1.0
Chronic Obstructive Pulmonary Disease	5,305	2.4†	0.6†	1,761	1.5†	0.8†

* Group I is the lowest income quintile; Group V is the highest.

† 95% confidence interval excludes 1.00 ($p<0.05$).

§ Alcoholism includes alcoholic psychosis, alcohol dependence syndrome, alcoholic gastritis, alcoholic cardiomyopathy, alcoholic polyneuropathy, and alcoholic liver disease.

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Immunization of Children Infected With Human Immunodeficiency Virus — Supplementary ACIP Statement

The Immunization Practices Advisory Committee (ACIP) recently reviewed data both on the risks and benefits of immunizing children infected with human immunodeficiency virus (HIV)[1] and on severe and fatal measles in HIV-infected children in the United States.[2] Since this review, the committee has revised its previous recommendations for measles vaccination and for mumps and rubella vaccination.

Previously published ACIP statements on immunizing HIV-infected children have recommended vaccinating children with asymptomatic HIV infection, but not those with symptomatic HIV infection.[3] After considering reports of severe measles in symptomatic HIV-infected children, and in the absence of reports of serious or unusual adverse effects of measles, mumps, and rubella (MMR) vaccination in limited studies of symptomatic patients,[4,5] the committee feels that administration of MMR vaccine should be considered for all HIV-infected children, regardless of symptoms. This approach is consistent with the World Health Organization's recommendation for measles vaccination.[6]

If the decision to vaccinate is made, symptomatic HIV-infeected children should receive MMR vaccine at 15 months, the age currently rcommended for vaccination of children without HIV infection and for those with asymptomatic HIV infection, these children should receive vaccine at younger ages. At such times, infants 6 to 11 months of age should receive monovalent measles vaccine and should be revaccinated with MMR at 12 months of age or older. Children 12-14 months of age should receive MMR and do not need revaccination.[7]

The use of high-dose intravenous immune globulin (IGIV) (approximately 5 gm% protein) administered at regular intervals is being studied to determine whether it will prevent a variety of infections in HIV-infected children. It should be recognized that MMR vaccine may be ineffective if administered to a child who has received IGIV during the preceding 3 months.

Immune globulin (IG) (16.5 gm% protein) can be used to prevent or modify measles infection in HIV-infected children if administered within 6 days of exposure. IG is indicated for measles-susceptible[*] household contacts of children with asymptomatic HIV infection, particularly or those under 1 year of age and for measles-susceptible pregnant women. The recommended dose is 0.25 mL/kg intramuscularly (maximum dose, 15 mL).[7]

In contrast, exposed symptomatic HIV-infected patients receive IG prophylaxis regardless of vaccination status. The standard postexposure measles prophylaxis regimen for such patients is 0.5 mL/kg of IG intramuscularly (maximum dose, 15 mL).[7] This regimen corresponds to a dose of protein of approximately 82.5 mg/kg (maximum dose, 2,475 mg). Intramuscular IG may not be necessary if a patient with HIV infection is receiving 100-400 mg/kg IGIV at regular intervals and received the last dose within 3 weeks of exposure to measles. Based on the amount of protein that can be administered, high-dose IGIV may be as effective as IG given intramuscularly. However, no data exist on the efficacy of IGIV administered postexposure in preventing measles.

Although postexposure administration of globulins to symptomatic HIV-infected patients is recommended regardless of measles vaccine status, vaccination prior to exposure is desirable. Measles exposures are often unrecognized, and postexposure prophylaxis is not always possible.

While recommendations for MMR vaccine have changed, those for other vaccines have not.[3] A summary of the current ACIP recommendations for HIV-infected persons follows (Table I). These recommendations apply to adolescents and adults with HIV infection as well as to HIV-infected children.

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[*] Persons who are unvaccinated or do not have laboratory evidence or physician documentation of previous measles disease.[7]

Table 1

RECOMMENDATIONS FOR ROUTINE IMMUNIZATION OF HIV-INFECTED CHILDREN — UNITED STATES, 1988[**]

Vaccine	*HIV Infection*	
	Known Asymptomatic	*Symptomatic*
DTP[†]	yes	yes
OPV[§]	no	no
IPV[*]	yes	yes
MMR[**]	yes	yes[††]
HbCV[§§]	yes	yes
Pneumococcal	no	yes
Influenza	no	yes

[*] See accompanying text and previous ACIP statement[3] for details.

[†] DTP = Diptheria and tetanus toxoids and pertussis vaccine.

[§] OPV = Oral, attenuated poliovirus vaccine; contains poliovirus types 1, 2, and 3.

[*] IPV = Inactivated poliovirus vaccine; contains poliovirus types 1, 2, and 3.

[**] MMR = Live measles, mumps, and rubella viruses in a combined vaccine.

[††] Should be considered.

[§§] HbCV = *Haemophilus influenzae* type b conjugate vaccine.

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Measles in HIV-Infected Children, United States

The Centers for Disease Control has received reports of six cases of measles that occurred among children infected with human immunodeficiency virus (HIV) in the United States during the period 1986-1987 (Table 1). Two of these children died from measles. Like many other infections, measles appears to be more severe in persons with HIV infection.

Patients one to three became ill during a nosocomial outbreak in a New York City hospital.[1] These patients had acquired HIV infections perinatally. None had received measles vaccine nor were they receiving intravenous immune globulin (IGIV). All were assumed to have had a common source of exposure to measles in the hospital, but the source was never identified. A medical student, who probably acquired disease from the same source, developed a rash several days before the children did. The medical student, whose rash illness was initially thought to be varicella because she recently had been exposed to a patient with varicella, had contact with the HIV-infected patients. Consequently, Patient 2 received varicella-zoster immune globulin (VZIG), and Patient 1 received intramuscular immune globulin (IG). Both patients developed measles within several days of globulin administration and thus may have received globulins more than six days after exposure. Patient 1, a 7-month-old with HIV class P-0 infection (interminant), and Patient 3, a 4-year-old with HIV class P-2, subclass D-1 infection (cryptosporidiosis),[2] had typical measles illnesses with cough, coryza, conjunctivitis, Koplik spots, and rash. Patient 1 had a measles hemagglutination-inhibition (HI) antibody titer of ten on the first day of rash (due either to residual, passively transferred maternal antibody or to passive immunization). Patient 2, a 2-year-old with HIV class P-2, subclass D-2 infection (recurrent bacterial infections), had only a transient rash and Koplik spots. Both Patients 2 and 3 developed severe pneumonia and were treated with aerosolized ribavirin.[4] Patient 3 died, and autopsy showed diffuse giant-cell pneumonia typical of measles infection consisting of multinucleate giant cells with nuclear and cytoplasmic inclusions.[5]

Patient 4, a 2-year-old with perinatally acquired HIV infection, had HIV clas P2, subclass A infection (hepatosplenomegaly, generalized lymphadenopathy, and herpes stomatitis) at the time of onset of measles. She acquired measles during hospitalization at a different hospital in New York City. The source of her infection was not determined. This patient had never been vaccinated against measles and was not receiving IGIV. She developed generalized rash, fever, coryza, conjunctivitis, Koplik spots, and otitis media but no other complications.

Patient 5, a 4-year-old child with perinatally acquired HIV class P-2, subclass C infection (lymphoid interstitial pneumonitis), was admitted with fever and pneumonia to a hospital in Miami, Florida. The patient had never been vaccinated against measles but was receiving IGIV (200 mg/kg) prophylactically every month. The last dose had been received three weeks before onset of illness. Her measles antibody titer at the time of onset of illness is not known. The patient developed respiratory failure and died eight days after admission. There was no history of rash. The diagnosis of measles pneumonia was made on postmortem examination of lung tissue that showed multinucleate giant cells with nuclear and cytoplasmic inclusions. This patient was not isolated during her hospitalization, and nosocomial transmission of measles resulted: a pediatric nurse and a patient, neither of whom had been vaccinated, acquired measles from the child. One additional patient acquired infection from the nurse.

Patient 6, a 14-year-old with HIV Group IV infection (thrombocytopenia),[3] had acquired HIV as a result of a blood transfusion. He had been immunized with live, attenuated measles vaccine at 15 months and again at nine years of age. The patient was admitted to a hospital with fever and later developed rash and pneumonia. Measles was serologically confirmed. The patient was treated with aerosolized ribavirin and recovered without sequelae.

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Editorial Note: In addition to these six measles cases in children with HIV infection, CDC has received reports of two measles cases in HIV-infected adults. Both survived the acute measles infection, although one was hospitalized. The two measles deaths involving HIV-infected children in 1987 were the first deaths due to measles in the United States to be reported to CDC since 1985. While there may be underreporting of nonhospitalized or nonfatal measles cases in persons with HIV infection, the case-fatality rate for measles in HIV-infected children is clearly higher than the case-fatality rate for measles in recent years in the United States, 0.1%.[6]

Severe measles infections have been reported in other immunocompromised patients. Measles infection without rash has also been described.[7] Physicians caring for patients with HIV infection should be aware that measles can be severe and may occur without the typical rash. This may preclude diagnosis and, thus, delay or prevent initiation of treatment, outbreak control measures, or appropriate hospital isolation. The fact that an unimmunized medical worker acquired measles from one of these cases and was involved in transmission to a hospitalized patient is noteworthy. In addition, five of the six measles cases in HIV-infected children were acquired in

Table 1
CASES OF MEASLES IN CHILDREN INFECTED WITH HIV — UNITED STATES, 1986-1987

Case	*Age*	*City*	*HIV Classification*	*Measles Vaccine*	*Acquired*	*Typical Rash*	*Complication*	*Outcome*
1	7 mo	NYC	P-0*	no	hospital	yes	none	survived†
2	2 yr	NYC	P-2/D-2*	no	hospital	no§	pneumonia	survived#
3	4 yr	NYC	P-2/D-1*	no	hospital	yes	pneumonia	died
4	2 yr	NYC	P-2/A*	no	hospital	yes	otis media	survived
5	4 yr	Miami	P-2/C*	no	ER††	no§	pneumonia	died
6	14 yr	NYC	IV/E**	yes	community	yes	pneumonia	survived

* For classification criteria, see *MMWR* 1987;36:225-35(*2*).

† Postexposure prophylaxis with immune globulin more than 6 days after exposure.

§ Evanescent rash with Koplik spots.

# Postexposure prophylaxis with varicella-zoster immune globulin more than 6 days after exposure.

** For classification criteria, see *MMWR* 1986;35:334-9(*3*).

†† Probable exposure in an emergency room.

medical settings. Since hospital workers may acquire and/or transmit measles, hospitals should ensure that employees who may have occupational exposure to measles have proof of measles immunity.[8]

During 1986 and 1987, large measles outbreaks occurred in urban areas of the United States among pre school-age children with low immunization levels.[9] These areas (New York City, Jersey City, and Miami) also have high incidence rates of pediatric acquired immunodeficiency syndrome. Since HIV-infected children may live in areas where measles virus circulates because of low preschool measles immunization levels, they may be at higher risk of exposure to measles than other children in the United States.

As a result of these recent reports of measles in HIV-infected children, the Immunization Practices Advisory Committee (ACIP) now recommends that measles vaccine be considered for symptomatic as well as asymptomatic children with HIV infection.[10] This approach to protect the HIV-infected child is consistent with the World Health Organization's recommendation to provide measles vaccination for all children in developing countries regardless of HIV and symptom status because of the high risk of measles and the severity of measles infection in general.[11]

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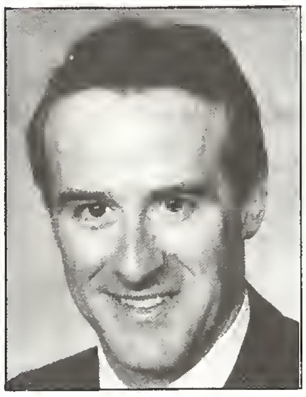

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The Choice of Antimicrobial Drugs

THE MEDICAL LETTER

Since The Medical Letter last reviewed the choice of antimicrobial drugs, some new drugs have become available, and some new clinical studies of older drugs have been published. The drug of choice for treatment of an infection is usually the most active drug against the pathogenic organism or the least toxic alternative among several effective agents. Sometimes the choice of drugs is modified by the site of infection; one drug may penetrate better than another into bile, urine, or cerebrospinal fluid. The patient's clinical status may also influence the choice as, for example, when a patient has diminished renal or hepatic function, is allergic to penicillin, is immunocompromised, or is pregnant. Finally, when other factors are about equal, the relative cost may be a consideration.

MENINGITIS—In bacterial meningitis, prompt treatment is essential, and antimicrobial drugs should not be withheld until laboratory studies are completed. The organisms most commonly responsible for bacterial meningitis are *Haemophilus influenzae, Streptococcus pneumoniae,* and *Neisseria meningitidis.*

In Adults—Penicillin G in large intravenous doses is usually recommended for treatment of meningitis in adults, pending results of cultures, because of its effectiveness against pneumococcal or meningococcal meningitis. Some Medical Letter consultants substitute ampicillin for penicillin G because *H. influenzae* can also cause meningitis in adults and ampicillin is generally more active against this organism, but an increasing number of *H. influenzae* strains produce a beta-lactamase and are resistant to both ampicillin and penicillin; cefotaxime, ceftriaxone, cefuroxime, or chloramphenicol can be used to treat meningitis due to beta-lactamase-producing strains of *H. influenzae.*

Enteric gram-negative bacteria can also cause meningitis, especially in patients more than 60 years old, and in those who have had neurosurgery or have a compromised immune response. When a gram-stained smear of cerebrospinal fluid from an adult shows gram-negative rods, many Medical Letter consultants now begin therapy with cefotaxime, ceftriaxone, or ceftizoxime, which effectively penetrate inflamed meninges and are active against most strains of gram-negative bacilli (but not against *Pseudomonas aeruginosa* or *Acinetobacter).* For *Pseudomonas* meningitis, concurrent use of either carbenicillin, ticarcillin, mezlocillin, piperacillin, azlocillin, or ceftazidime together with an aminoglycoside (gentamicin, tobramycin, amikacin) is recommended. *Listeria monocytogenes,* a gram-positive bacillus that also causes meningitis, does not respond to cephalosporins; *Listeria* meningitis should be treated with ampicillin with or without gentamicin.

In Penicillin-Allergic Patients—Bacterial meningitis in patients with a history of allergy to penicillin is a special problem. A few Medical Letter consultants would still treat these patients with penicillin if they have never had immediate reactions to it, observe them closely, and be prepared to treat anaphylaxis promptly. Cefotaxime, ceftriaxone, ceftizoxime, or cefuroxime could be used for meningitis in penicillin-allergic patients, but such patients may also have allergic reactions to cephalosporins. When use of a penicillin or cephalosporin seems unwise, chloramphenicol can be given for initial treatment of meningitis, but may not be effective if the pathogens are enteric gram-negative bacilli. Aztreonam is active against many of the gram-negative bacillary pathogens that cause meningitis and appears to be safe in patients who are allergic to penicillin, but it has no activity against gram-positive organisms, and clinical experience with the drug in meningitis is limited. Imipenem also has had limited use in bacterial meningitis; patients allergic to penicillin may also have allergic reactions to imipenem.

In Children—In children more than one month old, *H. influenzae* is the mot common cause of bacterial meningitis. In some parts of the USA, 20% or more of *H. influenzae* strains are resistant to ampicillin, and rare strains are resistant to chloramphenicol. To assure effective treatment from the outset, many pediatric infectious disease specialists now use cefotaxime or ceftriaxone; cefuroxime has also been recommended for this indication, but recent reports of occasional treatment failures and relapses have made some experts reluctant to use it (GH McCracken, Jr et al, Pediatr Infect Dis J, 6:501, 1987). Concurrent use of chloramphenicol and ampicillin until results of cultures and susceptibility tests are known remains an acceptable alternative.

Meningitis and Sepsis in Newborns—In infants less than one month old, meningitis and sepsis are most often caused by gram-negative enteric organisms, group B streptococci, other streptococci, or *Listeria monocytogenes.* For meningitis or sepsis in this age group, pending

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results of cultures and susceptibility tests, most pediatric infectious disease experts use ampicillin plus gentamicin or tobramycin (or amikacin in areas where gentamicin-resistant enteric organisms are common). Ampicillin plus cefotaxime can be used as an alternative.

BACTEREMIA—Bacteremia also requires prompt treatment without waiting for results of laboratory tests. Choice of drugs should be based on the probable source of infection (such as the urinary tract), on gram-stained smears of appropriate clinical specimens, and on the immune status of the patient. The choice should also reflect current patterns of bacterial resistance in the community and in the hospital.

New Beta Lactams—The "third-generation" cephalosporins (cefotaxime, ceftizoxime, cefoperazone, ceftriaxone, and ceftazidime), imipenem, or aztreonam can be used for treatment of bacteremia caused by many strains of gram-negative bacilli, without the ototoxicity and nephrotoxicity of the aminoglycosides (gentamicin, tobramycin, netilmicin, and amikacin). Moxalactam, another third-generation cephalosporin, has been associated with serious, sometimes fatal, bleeding disorders, and Medical Letter consultants now advise against its use. Cefoperazone has less activity than the other third-generation cephalosporins against enteric gram-negative organisms and can also cause bleeding.

In contrast to the aminoglycosides, the cephalosporins, with the exception of ceftazidime and cefoperazone, have limited activity against *Pseudomonas aeruginosa.* Imipenem and aztreonam are active against *P. aeruginosa.* Resistance emerges frequently, however, when any of these agents are used alone to treat *Pseudomonas* infections other than uncomplicated urinary tract infections.

Initial Treatment—For initial treatment of life-threatening bacteremia in adults, most Medical Letter consultants now recommend a third-generation cephalosporin (such as cefotaxime, ceftizoxime, or ceftriaxone), ticarcillin-clavulanic acid, or imipenem, together with gentamicin, tobramycin, or amikacin. When bacterial endocarditis is suspected and therapy must be started before the pathogen is identified, a combination of penicillin G (or ampicillin), gentamicin, and either oxacillin or nafcillin can be used. When methicillin-resistant staphylococci are suspected, treatment with vancomycin plus gentamicin is recommended.

For intra-abdominal or pelvic infections likely to involve anaerobes, coverage should include clindamycin or metronidazole together with an aminoglycoside, or, alternatively, ticarcillin-clavulanic acid, imipenem, or cefoxitin. Clinical studies have generally shown no important differences in effectiveness between these regimens. Cefotetan or ampicillin-sulbactam may also be effective for treatment of intra-abdominal or pelvic infections, but clinical experience with these drugs has been limited. When the source of bacteremia is thought to be in the biliary tract, some clinicians would use ampicillin or a cephalosporin concurrently with gentamicin, tobramycin, or amikacin, possibly also with an anti-anaerobic agent such as metronidazole.

Antibiotic-Resistant Gram-Negative Bacilli—In areas where gentamicin and tobramycin have been used frequently, gram-negative bacteria resistant to these agents and to netilmicin may be prevalent; such strains are often susceptible to amikacin, cefotaxime, ceftizoxime, ceftriaxone, ceftazidime, imipenem, and aztreonam. *Pseudomonas* strains resistant to gentamicin may sometimes be susceptible to tobramycin or netilmicin and often are susceptible to amikacin, ceftazidime, imipenem, aztreonam, and ciprofloxacin.

Neutropenic Patients—Because *Pseudomonas* infections occur commonly in neutropenic patients and because combinations of potentially synergistic bactericidal agents are often most effective for suspected bacteremia in these patients, some Medical Letter consultants recommend an aminoglycoside (gentamicin, tobramycin, or amikacin) plus ticarcillin, azlocillin, mezlocillin, piperacillin, or ceftazidime. Imipenem with an aminoglycoside is an alternative regimen for treatment of suspected bacteremia in neutropenic patients.

THE TABLE—The table that begins on the next page lists first-choice antimicrobial drugs and alternatives for infections caused by pathogenic organisms. These recommendations are based on results of susceptibility studies, published clinical trials, and the experience and opinions of Medical Letter consultants specializing in infectious diseases. While all of the consultants have agreed on many of the recommendations, the table generally represents a consensus, not unanimity.

ANTIMICROBIAL DRUGS OF CHOICE[†]

Infecting Organism	Drug of First Choice	Alternative Drugs
GRAM-POSITIVE COCCI		
**Staphylococcus aureus* or *epidermidis*		
non-penicillinase producing	penicillin G or V[1]	a cephalosporin[2,3]; vancomycin; imipenem; clindamycin; ciprofloxacin[4]
penicillinase-producing	a penicillinase-resistant penicillin[5]	a cephalosporin[2,3]; vancomycin; amoxicillin-clavulanic acid; ticarcillin-clavulanic acid; ampicillin-sulbactam; imipenem; clindamycin; ciprofloxacin[4]
methicillin-resistant[6]	vancomycin, with or without rifampin[7] and/or gentamicin	trimethoprim-sulfamethoxazole[7]; ciprofloxacin[4]
Streptococcus pyogenes (Group A) and Groups C and G	penicillin G or V[1]	an erythromycin[8]; a cephalosporin[2,3]; vancomycin
Streptococcus, Group B	penicillin G or ampicillin	a cephalosporin[2,3]; vancomycin[7]; an erythromycin[7]
Streptococcus, viridans group[9]	penicillin G with or without gentamicin[7]	a cephalosporin[2,3]; vancomycin
Streptococcus bovis[9]	penicillin G	a cephalosporin[2,3]; vancomycin
Streptococcus, enterococcus group		
endocarditis[9] or other severe infection	penicillin G or ampicillin with gentamicin[7]	vancomycin with gentamicin[7]
uncomplicated urinary tract infection[10]	ampicillin or amoxicillin	norfloxacin[4]; ciprofloxacin[4]; nitrofurantoin
Streptococcus, anaerobic or *Peptostreptococcus*	penicillin G	clindamycin; a cephalosporin[2,3]; vancomycin[7]
**Streptococcus pneumoniae*[11] (pneumococcus)	penicillin G or V[1]	an erythromycin[8]; a cephalosporin[2,3]; chloramphenicol[12]; vancomycin[7]

[†] Drugs of choice for fungal infections appeared in the March 11, 1988 issue of The Medical Letter. Drugs of choice for acid-fast bacilli will appear in the April 8th issue.

* Resistance may be a problem; susceptibility tests should be performed.

1. Penicillin V is preferred for oral treatment of infections caused by non-penicillinase-producing staphylococci and other gram-positive cocci. For initial therapy of severe infections, penicillin G, administered parenterally, is first choice. For somewhat longer action in less severe infections due to Group A streptococci, pneumococci, or *Treponema pallidum*, procaine penicillin G, an intramuscular formulation, is given once or twice daily. Benzathine penicillin G, a slowly absorbed intramuscular preparation, is usually given in a single monthly injection for prophylaxis of rheumatic fever, once for treatment of Group A streptococcal pharyngitis, and once or more for treatment of syphilis.
2. The cephalosporins have been used as alternatives to penicillins in patients allergic to penicillins, but such patients may also have allergic reactions to cephalosporins.
3. For parenteral treatment of staphylococcal or non-enterococcal streptococcal infections, a "first-generation" cephalosporin such as cephalothin, cephapirin, cephradine, or cefazolin can be used; for staphylococcal endocarditis, some Medical Letter consultants prefer cephalothin or cephapirin. For oral therapy, cephalexin or cephradine can be used. The "second-generation" cephalosporins cefamandole, cefuroxime, cefuroxime axetil, cefonicid, ceforanide, cefotetan, and cefoxitin are more active than the first-generation drugs against gram-negative bacteria. Cefuroxime and cefamandole are active against ampicillin-resistant strains of *H. influenzae*, but cefamandole has been associated with prothrombin deficiency and occasional bleeding. Cefoxitin and cefotetan are active against *B. fragilis*. The "third-generation" cephalosporins cefotaxime, cefoperazone, ceftizoxime, ceftriaxone, and ceftazidime have greater activity than the second-generation drugs against enteric gram-negative bacilli. Moxalactam, another "third-generation" cephalosporin, has been associated with serious, sometimes fatal, bleeding disorders, and Medical Letter consultants now advise against its use; in any case, it should not be used to treat infections caused by gram-positive organisms. With the exception of cefoperazone (which can also cause bleeding) and ceftazidime, the activity of all currently available cephalosporins against *Pseudomonas aeruginosa* is poor or inconsistent (GR Donowitz and GL Mandell, N Engl J Med, 318:490, 1988).
4. Not recommended for children.
5. For oral use against penicillinase-producing staphylococci, cloxacillin or dicloxacillin is preferred; for severe infections, a parenteral formulation of methicillin, nafcillin, or oxacillin should be used. Neither ampicillin, amoxicillin, amdinocillin, bacampicillin, cyclacillin, hetacillin, carbenicillin, ticarcillin, mezlocillin, azlocillin, nor piperacillin is effective against penicillinase-producing staphylococci. However, the combinations of clavulanic acid with amoxicillin or ticarcillin and of sulbactam with ampicillin are active against these organisms.
6. Occasional strains of coagulase-positive staphylococci and many strains of coagulase-negative staphylococci are resistant to penicillinase-resistant penicillins; these strains are also resistant to cephalosporins and to imipenem.
7. Not approved for this indication by the U.S. Food and Drug Administration.
8. Occasional strains of Group A streptococci and pneumococci may be resistant to erythromycins.
9. In endocarditis, disk sensitivity testing does not provide adequate information; dilution tests for susceptibility should be used to assess bactericidal as well as inhibitory end points. Peak bactericidal activity of the serum against the patient's own organism should be present at a serum dilution of at least 1:8.
10. Routine antimicrobial susceptibility tests may be misleading. Because of high urine concentrations, ampicillin may be effective in urinary tract infections, even when the organism is reported to be "resistant."
11. In patients allergic to penicillin, an erythromycin is preferred for respiratory infections and chloramphenicol is recommended for meningitis. Rare strains of *Streptococcus pneumoniae* may be relatively resistant or resistant to penicillin; these strains are susceptible to vancomycin.
12. Because of the frequency of serious adverse effects, this drug should be used only for severe infections when less hazardous drugs are ineffective.

Infecting Organism	Drug of First Choice	Alternative Drugs
GRAM-NEGATIVE COCCI		
Branhamella (Neisseria) *catarrhalis*	amoxicillin-clavulanic acid	trimethoprim-sulfamethoxazole[7]; an erythromycin[7]; a tetracycline[7,13]; cefuroxime[2,7]; cefotaxime[2,7]; ceftizoxime[2,7]; ceftriaxone[2,7]; cefuroxime axetil[2]
* *Neisseria gonorrhoeae*[14] (gonococcus)	ceftriaxone[2]	penicillin G; amoxicillin with probenecid; spectinomycin; cefoxitin[2]; trimethoprim-sulfamethoxazole[7]; chloramphenicol[12]; ciprofloxacin[4,7]
Neisseria meningitidis[15] (meningococcus)	penicillin G	chloramphenicol[12]; cefuroxime[2]; cefotaxime[2]; ceftizoxime[2,7]; ceftriaxone[2]; trimethoprim-sulfamethoxazole[7]; a sulfonamide[16]
GRAM-POSITIVE BACILLI		
Bacillus anthracis (anthrax)	penicillin G	an erythromycin[7]; a tetracycline[13]
Clostridium perfringens[17]	penicillin G	chloramphenicol[12]; metronidazole; clindamycin; a tetracycline[13]
Clostridium tetani[18]	penicillin G	a tetracycline[13]
Clostridium difficile[19]	vancomycin	metronidazole; bacitracin[7]
Corynebacterium diphtheriae[20]	an erythromycin	penicillin G
Corynebacterium, JK group	vancomycin[7]	
Listeria monocytogenes	ampicillin[7] with or without gentamicin[7]	trimethoprim-sulfamethoxazole[7]; an erythromycin
ENTERIC GRAM-NEGATIVE BACILLI		
* *Bacteroides*		
oropharyngeal strains	penicillin G[7,21]	clindamycin; cefoxitin[2]; metronidazole; chloramphenicol[12]; cefotetan[2,7]
gastrointestinal strains[22]	clindamycin or metronidazole	cefoxitin[2]; chloramphenicol[12]; mezlocillin, ticarcillin, or piperacillin; imipenem; ticarcillin-clavulanic acid[7]; ampicillin-sulbactam; cefotetan[2]
* *Campylobacter jejuni*	an erythromycin[7] or ciprofloxacin[4]	a tetracycline[13]; gentamicin[7]; chloramphenicol[12]
* *Enterobacter*	cefotaxime[2,23], ceftizoxime[2,23], or ceftriaxone[2,23]	gentamicin, tobramycin, or amikacin; imipenem[23]; carbenicillin[24], ticarcillin[24], mezlocillin[24], piperacillin[24], or azlocillin[7,24]; aztreonam; ceftazidime[2,23]; trimethoprim-sulfamethoxazole; ciprofloxacin[4]; norfloxacin[4,25]; chloramphenicol[12]
* *Escherichia coli*[26]	ampicillin[27] with or without gentamicin, tobramycin, or amikacin	a cephalosporin[2,3,23]; carbenicillin[24], ticarcillin[24], mezlocillin[24], piperacillin[24], or azlocillin[24]; gentamicin, tobramycin, or amikacin; amoxicillin-clavulanic acid[23]; ticarcillin-clavulanic acid[24]; ampicillin-sulbactam[23]; trimethoprim-sulfamethoxazole; imipenem[23]; aztreonam; a tetracycline[13]; ciprofloxacin[4]; norfloxacin[4,25]; chloramphenicol[12]

* Resistance may be a problem; susceptibility tests should be performed.

13. Tetracyclines are generally not recommended for pregnant women or children less than eight years old.
14. For more details, see The Medical Letter, 30:5, 1988.
15. Rifampin is recommended for prophylaxis in close contacts of patients infected by sulfonamide-resistant organisms. Minocycline may also be effective for such prophylaxis but frequently causes vomiting and vertigo. An oral sulfonamide is recommended for prophylaxis in close contacts of patients known to be infected by sulfonamide-sensitive organisms.
16. Sulfonamide-resistant strains are frequent in the USA and sulfonamides should be used only when susceptibility is established by susceptibility tests.
17. Debridement is primary. Large doses of penicillin G are required. Hyperbaric oxygen therapy may be a useful adjunct to surgical debridement in management of the spreading, necrotic type.
18. For prophylaxis, a tetanus toxoid booster and, for some patients, tetanus immune globulin (human) are required.
19. Antibiotic-associated diarrhea or colitis should be treated by discontinuing the implicated antibiotic and avoiding use of antiperistaltic drugs or corticosteroids. When *C. difficile* is involved, vancomycin, metronidazole, or bacitracin should be given by mouth. If oral therapy cannot be used (such as with severe ileus or recent surgery), parenteral metronidazole is preferred.
20. Antitoxin is primary; antimicrobials are used only to halt further toxin production and to prevent the carrier state.
21. The proportion of penicillin-resistant *Bacteroides* species from the oropharynx has been increasing recently; for patients seriously ill with infections that may be due to these organisms, or where response to penicillin is delayed, clindamycin is preferred.
22. When infection is in the central nervous system, either intravenous metronidazole or chloramphenicol is recommended.
23. In severely ill patients, some Medical Letter consultants would add gentamicin, tobramycin, or amikacin.
24. In severely ill patients, some Medical Letter consultants would add gentamicin, tobramycin, or amikacin (but see footnote 36).
25. Indicated for treatment of urinary tract infections only.
26. For an acute, uncomplicated urinary tract infection, before the infecting organism is known, the drug of first choice is one of the oral soluble sulfonamides, such as sulfisoxazole, or (for *E. coli* or *Proteus mirabilis*) ampicillin or amoxicillin, or (for *Klebsiella*) a cephalosporin. Trimethoprim or trimethoprim-sulfamethoxazole is also useful for treatment of urinary tract infections caused by susceptible organisms.
27. In some areas, a fairly high percentage of *E. coli* strains may be resistant to ampicillin.

Infecting Organism	Drug of First Choice	Alternative Drugs
Enteric Gram-Negative Bacilli (continued)		
*_Klebsiella pneumoniae_[26]	a cephalosporin[2,3,23]	gentamicin, tobramycin, or amikacin; amoxicillin-clavulanic acid[23]; ticarcillin-clavulanic acid[24]; ampicillin-sulbactam[23]; trimethoprim-sulfamethoxazole; imipenem[23]; aztreonam; a tetracycline[13]; ciprofloxacin[4]; norfloxacin[4,25]; chloramphenicol[12]; mezlocillin[24] or piperacillin[24]
*_Proteus mirabilis_[26]	ampicillin[28]	a cephalosporin[2,3,23]; carbenicillin[24], ticarcillin[24], mezlocillin[24], piperacillin[24], or azlocillin[24]; gentamicin, tobramycin, or amikacin; trimethoprim-sulfamethoxazole; imipenem[23]; aztreonam; ciprofloxacin[4]; norfloxacin[4,25]; chloramphenicol[12]
*_Proteus_, indole-positive (including _Providencia rettgeri, Morganella morganii,_ and _Proteus vulgaris_)	cefotaxime[2,7,23], ceftizoxime[2,23], or ceftriaxone[2,23]	gentamicin, tobramycin, or amikacin; carbenicillin[24], ticarcillin[24], mezlocillin[24], piperacillin[24], or azlocillin[7,24]; amoxicillin-clavulanic acid[7,23]; ticarcillin-clavulanic acid[7,24]; ampicillin-sulbactam[7,23]; imipenem[7,23]; aztreonam[7]; ceftazidime[2,23]; trimethoprim-sulfamethoxazole; a tetracycline[7,13]; ciprofloxacin[4]; norfloxacin[4,25]; chloramphenicol[12]
*_Providencia stuartii_	cefotaxime[2,7,23], ceftizoxime[2,7,23], or ceftriaxone[2,7,23]	imipenem[7,23]; ticarcillin-clavulanic acid[7,24]; gentamicin[7], tobramycin, or amikacin; carbenicillin[7,24], ticarcillin[7,24], mezlocillin[7,24], piperacillin[7,24], or azlocillin[7,24]; aztreonam[7]; ceftazidime[2,7,23]; trimethoprim-sulfamethoxazole[7]; ciprofloxacin[4]; norfloxacin[4,7,25]; chloramphenicol[12]
*_Salmonella typhi_[29]	chloramphenicol[12]	ampicillin; amoxicillin[7]; trimethoprim-sulfamethoxazole[7]; ciprofloxacin[4,7]
*other _Salmonella_[30]	ampicillin or amoxicillin[7]	trimethoprim-sulfamethoxazole[7]; ciprofloxacin[4,7]; chloramphenicol[12]; cefotaxime[2,7] or ceftriaxone[2,7]
*_Serratia_	cefotaxime[2,31], ceftizoxime[2,31] or ceftriaxone[2,31]	gentamicin or amikacin; imipenem[31]; aztreonam; ceftazidime[2,31]; trimethoprim-sulfamethoxazole[7]; carbenicillin[7,32], ticarcillin[7,32], mezlocillin[32], piperacillin[32], or azlocillin[7,32]; ciprofloxacin[4]; norfloxacin[4,7,25]
*_Shigella_	trimethoprim-sulfamethoxazole	ciprofloxacin[4]; ampicillin; nalidixic acid[7]
*_Yersinia enterocolitica_	trimethoprim-sulfamethoxazole[7]	ciprofloxacin[4,7]; gentamicin[7], tobramycin[7], or amikacin[7]; a tetracycline[7,13]; cefotaxime[2,7] or ceftizoxime[2,7]
OTHER GRAM-NEGATIVE BACILLI		
*_Acinetobacter_ (Mima, Herellea)	imipenem[23]	tobramycin[7], gentamicin[7], or amikacin; carbenicillin[7,24], ticarcillin[7,24], mezlocillin[7,24], piperacillin[24], or azlocillin[7,24]; trimethoprim-sulfamethoxazole[7]; minocycline[13]; doxycycline[13]
*_Aeromonas hydrophila_	trimethoprim-sulfamethoxazole[7]	gentamicin[7] or tobramycin[7]; imipenem[7]; a tetracycline[7,13]
Bordetella pertussis (whooping cough)	an erythromycin	trimethoprim-sulfamethoxazole[7]; ampicillin[7]
*_Brucella_ (brucellosis)	a tetracycline[13] with streptomycin	chloramphenicol[12] with or without streptomycin; trimethoprim-sulfamethoxazole[7]; rifampin[7] with a tetracycline[13]
Calymmatobacterium granulomatis (granuloma inguinale)	a tetracycline[13]	streptomycin
*_Eikenella corrodens_	ampicillin[7]	an erythromycin[7]; a tetracycline[7,13]; amoxicillin-clavulanic acid[7]; ampicillin-sulbactam[7]
*_Francisella tularensis_ (tularemia)	streptomycin or gentamicin[7]	a tetracycline[13]; chloramphenicol[12]

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* Resistance may be a problem; susceptibility tests should be performed.

[28] Large doses (6 grams or more daily) are usually necessary for systemic infections. In severely ill patients, some Medical Letter consultants would add gentamicin, tobramycin, or amikacin.

[29] Ampicillin or amoxicillin may be effective in milder cases. Ciprofloxacin[4] or ampicillin is the drug of choice for *S. typhi* carriers.

[30] Most cases of *Salmonella* gastroenteritis subside spontaneously without antimicrobial therapy. For treatment of *Salmonella* meningitis, some Medical Letter consultants recommend cefotaxime or ceftriaxone.

[31] In severely ill patients, some Medical Letter consultants would add gentamicin or amikacin.

[32] In severely ill patients, some Medical Letter consultants would add gentamicin or amikacin (but see footnote 36).

Infecting Organism	Drug of First Choice	Alternative Drugs
Fusobacterium* *Fusobacterium*	penicillin G	metronidazole; clindamycin; chloramphenicol[12]
Gardnerella (Haemophilus) *vaginalis*[33]	metronidazole[7]	ampicillin[7]
**Haemophilus ducreyi* (chancroid)	ceftriaxone[2,7] or an erythromycin[7]	trimethoprim-sulfamethoxazole[7]
**Haemophilus influenzae*		
meningitis, epiglottitis, arthritis, and other serious infections	cefotaxime[2] or ceftriaxone[2]	cefuroxime[2]; ampicillin plus chloramphenicol initially[34]
other infections	ampicillin or amoxicillin	trimethoprim-sulfamethoxazole; cefuroxime[2]; a sulfonamide with or without an erythromycin; amoxicillin-clavulanic acid; cefuroxime axetil[2]; cefaclor[2]; cefotaxime[2]; ceftizoxime[2]; ceftriaxone[2,7]; a tetracycline[13]
Legionella micdadei (L. pittsburgensis)	an erythromycin[7] with or without rifampin[7,35]	trimethoprim-sulfamethoxazole[7]
Legionella pneumophila	an erythromycin with or without rifampin[7,35]	trimethoprim-sulfamethoxazole[7]
Leptotrichia buccalis	penicillin G[7]	a tetracycline[7,13]; clindamycin[7]
Pasteurella multocida	penicillin G[7]	a tetracycline[7,13]; a cephalosporin[2]; amoxicillin-clavulanic acid[7]; ampicillin-sulbactam[7]
**Pseudomonas aeruginosa*		
urinary tract infection	carbenicillin or ticarcillin	piperacillin, mezlocillin, or azlocillin; ceftazidime[2]; imipenem; aztreonam; gentamicin; tobramycin; amikacin; norfloxacin[4]; ciprofloxacin[4]
other infections	carbenicillin, ticarcillin, mezlocillin, piperacillin, or azlocillin plus tobramycin, gentamicin, or amikacin[36]	tobramycin, gentamicin, or amikacin with ceftazidime[2], imipenem, or aztreonam; ciprofloxacin[4]
Pseudomonas mallei (glanders)	streptomycin[7] with a tetracycline[7,13]	streptomycin[7] with chloramphenicol[12]
**Pseudomonas maltophilia* (Xanthomonas maltophilia)	trimethoprim-sulfamethoxazole[7]	minocycline[7,13]; ceftazidime[2]; ciprofloxacin[4,7]
**Pseudomonas pseudomallei* (melioidosis)	trimethoprim-sulfamethoxazole[7]	a tetracycline[7,13] with or without chloramphenicol[12,37]; chloramphenicol[12] plus kanamycin[7], gentamicin[7], or tobramycin[7]; a sulfonamide[7]
Pseudomonas cepacia	trimethoprim-sulfamethoxazole[7]	chloramphenicol[12]; ceftazidime[2]; imipenem[7]
Spirillum minus (rat bite fever)	penicillin G	a tetracycline[7,13]; streptomycin[7]
Streptobacillus moniliformis (rat bite fever; Haverhill fever)	penicillin G	a tetracycline[7,13]; streptomycin[7]
Vibrio cholerae (cholera)[38]	a tetracycline[13]	trimethoprim-sulfamethoxazole[7]
Vibrio vulnificus	a tetracycline[7,13]	penicillin G[7]
Yersinia pestis (plague)	streptomycin	a tetracycline[13]; chloramphenicol[12]; gentamicin[7]
ACTINOMYCETES		
Actinomyces israelii (actinomycosis)	penicillin G	a tetracycline[13]
Nocardia	trisulfapyrimidines	trimethoprim-sulfamethoxazole[7]; amikacin[7]; minocycline[7]; trisulfapyrimidines with minocycline[7], ampicillin[7], or erythromycin[7]; cycloserine[7,12]
CHLAMYDIAE		
Chlamydia psittaci (psittacosis; ornithosis)	a tetracycline[13]	chloramphenicol[12]
Chlamydia trachomatis		
(trachoma)	a tetracycline[13] (topical plus oral)	a sulfonamide (topical plus oral)

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* Resistance may be a problem; susceptibility tests should be performed.

33. Metronidazole is effective for bacterial vaginosis even though it is not active against *Gardnerella in vitro*. Ampicillin should be used for sepsis.

34. Some strains of *H. influenzae* are resistant to ampicillin and rare strains are resistant to chloramphenicol. Chloramphenicol (75-100 mg/kg/day IV) plus ampicillin can be used initially for treatment of meningitis in children more than one month old until the organism is identified and its antimicrobial susceptibility is determined. Ampicillin is preferred by some Medical Letter consultants for treatment of organisms known to be susceptible.

35. Rifampin should be added only for patients who do not respond to erythromycin alone or in severely immunocompromised patients.

36. Neither gentamicin, tobramycin, netilmicin, nor amikacin should be mixed in the same bottle with carbenicillin, ticarcillin, mezlocillin, piperacillin, or azlocillin for intravenous administration. In high concentrations or in patients with renal failure, carbenicillin or ticarcillin may inactivate the aminoglycosides.

37. Seriously ill patients should be treated with both tetracycline and chloramphenicol.

38. Antibiotic therapy is an adjunct to and not a substitute for prompt fluid and electrolyte replacement.

Infecting Organism	Drug of First Choice	Alternative Drugs
Chlamydia trachomatis (continued)		
(inclusion conjunctivitis)	an erythromycin (oral or IV)	a sulfonamide
(pneumonia)	an erythromycin	a sulfonamide[7]
(urethritis or pelvic inflammatory disease)	a tetracycline[13] or an erythromycin	sulfisoxazole[7]
(lymphogranuloma venereum)	a tetracycline[13] or an erythromycin[7]	
MYCOPLASMA		
Mycoplasma pneumoniae	an erythromycin or a tetracycline[13]	
Ureaplasma urealyticum	an erythromycin	a tetracycline[7,13]
RICKETTSIA—Rocky Mountain spotted fever, endemic typhus (murine), tick bite fever, trench fever, typhus, scrub typhus, Q fever	a tetracycline[13]	chloramphenicol[12]
SPIROCHETES		
Borrelia burgdorferi[39] (Lyme disease)	a tetracycline[7,13]	penicillin G[7] or V[7]; ceftriaxone[2,7]; an erythromycin[7]
Borrelia recurrentis (relapsing fever)	a tetracycline[13]	penicillin G[7]
Leptospira	penicillin G[7]	a tetracycline[7,13]
Treponema pallidum	penicillin G[1]	a tetracycline[13]; an erythromycin
Treponema pertenue (yaws)	penicillin G[7]	a tetracycline[13]
VIRUSES		
Cytomegalovirus	ganciclovir[40]	
Herpes simplex (keratitis)	trifluridine (topical)	vidarabine (topical); idoxuridine (topical)
(genital)	acyclovir	
(encephalitis)	acyclovir[7]	vidarabine
(neonatal)	acyclovir[7]	vidarabine
(disseminated, adult)	acyclovir[7]	vidarabine[7]
Human immunodeficiency virus	zidovudine (azidothymidine)	
Influenza A	amantadine	
Respiratory syncytial virus	ribavirin	
Varicella-zoster	acyclovir[7]	vidarabine

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* Resistance may be a problem; susceptibility tests should be performed.

[39] For treatment of early infection in non-pregnant adults, tetracycline is preferred; for fully developed infection with arthritis or meningitis, intravenous penicillin G or ceftriaxone is preferred.

[40] An investigational drug in the USA.

PARTIAL LIST OF BRAND NAMES

acyclovir — *Zovirax*
*amantadine — *Symmetrel*; others
amdinocillin — *Coactin*
amikacin — *Amikin*
aminosalicylic acid — *P.A.S.*; others
*amoxicillin — *Amoxil*; others
amoxicillin-clavulanic acid — *Augmentin*
*ampicillin — *Polycillin*; others
ampicillin-sulbactam — *Unasyn*
azidothymidine (zidovudine) — *Retrovir*
azlocillin — *Azlin*
aztreonam — *Azactam*
bacampicillin — *Spectrobid*
carbenicillin — *Geopen, Geocillin*
cefaclor — *Ceclor*
cefadroxil — *Duricef; Ultracef*
cefamandole — *Mandol*
cefazolin — *Ancef; Kefzol*
cefonicid — *Monocid*
cefoperazone — *Cefobid*
ceforanide — *Precef*
cefotaxime — *Claforan*
cefotetan — *Cefotan*
cefoxitin — *Mefoxin*
ceftazidime — *Fortaz; Tazidime; Tazicef*
ceftizoxime — *Cefizox*
ceftriaxone — *Rocephin*
cefuroxime — *Zinacef; Kefurox*
cefuroxime axetil — *Ceftin*
*cephalexin — *Keflex*; others
*cephalothin — *Keflin*; others
cephapirin — *Cefadyl*
*cephradine — *Anspor*; others
*chloramphenicol — *Chloromycetin*; others
ciprofloxacin — *Cipro*
*clindamycin — *Cleocin*; others
*cloxacillin — *Tegopen*; others
cyclacillin — *Cyclapen-W*
*dicloxacillin — *Dycill*; others
*doxycycline — *Vibramycin*; others
*erythromycin — *Erythrocin*; others
erythromycin-sulfisoxazole — *Pediazole*
*gentamicin — *Garamycin*; others
hetacillin — *Versapen*
idoxuridine — *Herplex*; others
imipenem-cilastatin — *Primaxin*
*kanamycin — *Kantrex*; others
methicillin — *Staphcillin*
*metronidazole — *Flagyl*; others
mezlocillin — *Mezlin*
minocycline — *Minocin*
moxalactam — *Moxam*
nafcillin — *Nafcil; Unipen; Nallpen*
nalidixic acid — *NegGram*
netilmicin — *Netromycin*
*nitrofurantoin — *Furadantin*; others
norfloxacin — *Noroxin*
*oxacillin — *Prostaphlin*; others
*oxytetracycline — *Terramycin*; others
penicillin G benzathine — *Bicillin; Permapen*
piperacillin — *Pipracil*
ribavirin — *Virazole*
*sulfisoxazole — *Gantrisin*; others
*tetracycline HCl — *Achromycin*; others
ticarcillin — *Ticar*
ticarcillin-clavulanic acid — *Timentin*
tobramycin — *Nebcin*
trifluridine — *Viroptic*
*trimethoprim — *Proloprim*; others
*trimethoprim-sulfamethoxazole — *Bactrim*; others
*vancomycin — *Vancocin*; others
vidarabine — *Vira-A*
zidovudine — *Retrovir*

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View from the Hill

JAMES E. BRYAN

Otis Bowen, M.D., Secretary of Health and Human Services, is the first physician to direct that vast federal agency uniquely dedicated to the often-ignored constitutional injunction "to promote the general welfare." The secretary's writ and responsibility embrace a range of enterprises and functions infinitely more varied than those of any other department in the Executive Branch, and he administers a budget rivaled only by that of the Department of Defense.

Dr. Bowen's service in this formidable assignment is generally rated top-notch by politicians and professionals alike. A one-time practicing family physician whose political instincts and skills have been honed by years of public service at various government levels, Dr. Bowen consistently calls for a quality of leadership in the profession that exemplifies the prime missions of the physician as healer, student and teacher.

Addressing the American Society of Internal Medicine last October, the Secretary offered counsel regarding closely interrelated areas of deepening mutual concern to physicians and their fellow citizens as we approach the final decade of this tumultuous century. Dr. Bowen raised questions requiring crucial decisions affecting the ethical tone, the ideals and the functions of our entire society.

The secretary is not one to understate the complexity of these problems or the difficulty of finding effective responses to them. He emphasized that they cannot be dealt with separately, and "they cannot involve tradeoffs. . . . We cannot undertake to hold down costs at the expense of quality care," nor may we, for example, "reduce the number of malpractice suits at the expense of patients clearly injured by careless or improper practices . . . . The trick is to foster public policy that adds up gains on every front."

Dr. Bowen might have added here that the profession's discerned public policy ultimately reflects the sum or median of its individual and collective performances. Referring again to the malpractice dilemma, Dr. Bowen suggested that if many older physicians were to retire prematurely because of unacceptable liability costs and if their younger colleagues "reduce procedures out of fear of being sued, the result would be to reduce access to care," and the poor would suffer the most thereby. (In lieu of this and in favor of the spare, "elegant" kind of cognitive medicine advocated by the distinguished medical ethicist, Edmund Pellegrino, M.D., many believe that reducing only the unnecessary procedures and the overreliance on medical "gadgets" would help to achieve a high level of quality, efficiency and economy.)

Emphasizing the importance of an empathetic physician-patient relationship in reducing the incidence of patient complaints, Dr. Bowen reminded us that "medicine is a victim of its own success" in that it has inadvertently led many people to assume that modern medicine "has a surefire cure" for anything that ails them—an illusion that serves neither physician nor patient. Equally illusory and mischievous is the overweening adulation of science and technology, indulged in not only by the business and professional establishments but by our entire culture. This popular infatuation with science, its gadgets and widgets, tends to displace or diminish our interest and concern for social and ethical values.

Surely a soupcon of irony resides in the circumstance that, at the very time when medical people and those whom they serve are confronted with a variety of new, complex and sensitive ethical issues, society as a whole seems more careless of ethical matters than ever before in modern memory. These considerations are critical to the future of medicine as a profession and to physicians' view of themselves, to say nothing of their effectiveness in service to patients.

As part of a strong physician-patient relationship, physicians must candidly disclose and explain the risks to which a patient is or may be exposed in submitting to recommended or prescribed procedures. Dr. Bowen warned that "if the private practice of medicine is to prosper in this country, nothing you do as a physician is more important than talking to your patients and making sure they understand what you tell them. It also means listening."

And, he added, with clear reference to pressures insistently exerted on the profession by the currently dominant political and industrial powers, "the will to maintain a good [physician-patient] relationship comes from the heart, not the times we live in. And only if you insist on it will it happen." It follows that, absent the mutual attention, respect and candid communication of the one-on-

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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one, patient-physician dialogue—particularly if a third party or an alien or hidden motivation is privy or participant—the professionalism of the physician will be in question and the confidence of the patient in doubt.

Complaints brought against the DRG cost-containment device—forcing patients to be released from hospitals "quicker and sicker" are an example of this. The secretary also asked his colleagues to look at the other side of the coin and consider the question of admitting "patients who should not have been admitted at all." He pointed to both the costs and the risks of the hospital experience, some of which provide pretext, if not cause, for malpractice suits.

Medicine as a profession is assailed, affronted and threatened, not only by the rank commercialism to which the political and industrial powers would reduce it but, unhappily, by the general indifference and inattention of "the times we live in." I have previously suggested elsewhere as a "paradoxical fact" that "the physician, whose most elemental concern is to understand the rest of us, seems at times to be that element of society least integrated with the social complex of our times." I went on to suggest that, "Of course, detachment is to a certain degree necessary. The doctor must be of the earth but not earthy. His profession would lose much of the power and the glory were it to play the role of the hail fellow or of the 'common man.' The privilege of the laying on of hands requires that the doctor's hands be clean and that his spirit be worthy of our trust."

In summary, I submit that these reflections are not only in large part a tribute to Dr. Bowen, a distinguished public servant, but also appropriate to the spirit of a new era in medicine. Solid public esteem and confidence in the medical profession lie in individual physicians living up to their own concept of the "good doctor." Today, more than at any time in my life-long association with medicine, the profession is challenged to realize its own image of itself.

MDHP, MDEC, AND CSMS—IPA ANNUAL MEETINGS RESCHEDULED FOR JUNE

THE FIRST ANNUAL STOCKHOLDERS' MEETING OF M.D. ENTERPISES OF CONNECTICUT, INC., (M.D. HEALTH PLAN), AND THE FIRST ANNUAL MEETING OF CSMS-IPA, INC. HAVE BEEN RESCHEDULED BY THE EXECUTIVE COMMITTEES TO BE HELD AT 2:00 P.M. ON WEDNESDAY, JUNE 22, 1988, AT THE PARK PLAZA HOTEL IN NEW HAVEN. FOLLOWING EACH ANNUAL MEETING, THE RESPECTIVE BOARDS WILL BE SEATED AND THE OFFICERS ELECTED.

PROXY STATEMENTS AND OTHER RELATED MATERIALS WILL BE FORTHCOMING TO MEMBERS. INCLUDED WITH THIS MATERIAL WILL BE THE M.D. ENTERPRISES OF CONNECTICUT, INC. (MDEC) ANNUAL REPORT.

THE BYLAWS OF THESE ORGANIZATIONS PROVIDE FOR THE CSMS HOUSE OF DELEGATES TO NOMINATE PHYSICIAN MEMBERS TO EACH ORGANIZATION'S BOARD OF DIRECTORS AT ITS MEETING IN MAY. THE LATER JUNE 22ND DATE FOR THE MDEC AND CSMS-IPA ANNUAL MEETINGS WILL LEAVE SUFFICIENT TIME FOR PREPARATION OF FINAL PROXY STATEMENTS AND MEET THE DISTRIBUTION REQUIREMENTS OF THE COMPANIES' BYLAWS.

Current Medicolegal Issues

AMA—THE CITATION

New Trial Ordered For Cancer Patient's Malpractice Suit

A judgment in favor of a patient who sued her physician for treating her with unconventional, noninvasive cancer therapy should be reversed, a federal appellate court for New York ruled.

After a lump was discovered in the patient's right breast during her annual checkup in October 1981, she told her physician that she did not want a biopsy and would seek a physician who would treat her nonsurgically. Several other physicians whom she consulted advised her to undergo a biopsy and possibly a partial mastectomy, depending upon the analysis of the biopsied tissue. A month later she consulted with a physician and researcher who treated patients with nontoxic, noninvasive methods that had not been adopted by the medical community. She learned of the physician and his novel cancer therapy from a radio program.

After the patient signed a detailed consent form, the physician diagnosed cancer of the right breast and began treatment with selenium and dietary restrictions. On four separate occasions he recommended that she have the tumor surgically removed. After 14 months of treatment, the tumor had increased in size, and cancer had spread to her lymph system and left breast. She finally underwent a bilateral mastectomy in January 1983, and then 16 months of conventional chemotherapy.

She filed an action against the physician and the institute of applied biology, of which he was the president. Her claims were based on fraud, medical malpractice, lack of informed consent, and a loss of consortium by her husband. A jury awarded the patient $1,000,000 and her husband $50,000. The jury found that the patient was 50 percent responsible for her damages and cut the awards in half.

Reversing the decision, the court said that the defense of assumption of the risk was available to the physician under New York law and the trial court erred in not instructing the jury on that defense. There was sufficient evidence—in the language of the consent form that she signed and in testimony relating to the specific consent informed by her awareness of the risk of refusing conventional treatment to undergo the noninvasive treatment—to allow the jury to consider an express assumption of the risk as an affirmative defense that would totally bar recovery. The trial court should have instructed the jury on that issue, and the case should be remanded to the trial court for a new trial limited to the issue of assumption of risk.—*Schneider v. Revici,* 817 F.2d 987 (C.A.2, N.Y., April 30, 1987)

No Liability For Leaving Clamp In Patient's Abdomen

Two physicians and a hospital were not liable to a patient for leaving a surgical clamp in his abdomen during surgery, a Texas appellate court ruled.

The patient was brought to the hospital emergency room on February 14, 1983. He was suffering from liver disease, probably cirrhosis caused by alcohol consumption. He had vomited blood and was evidently bleeding from his digestive tract. The physicians performed a portacaval shunt operation to stop the bleeding by reducing the pressure in the veins where it was bleeding.

The operating physician testified that the operation was difficult. He said that when he opened the patient's abdomen it looked like somebody had poured a bucket of glue inside. He said that in his 20 years of surgery and experience in performing such operations that he had never seen the tissues and organs in the abdominal cavity so deteriorated. There was an abnormal amount of internal bleeding during the course of the operation. At one point, while working to control bleeding in the pelvic area, severe arterial bleeding occurred in the upper operative field. The physician had to stop working on the pelvis immediately and stop the arterial bleeding. He and his assistant theorized that it was possible that at that point a Kelly clamp could have slipped under a loop of intestine.

The patient went home after the opertion and was recovering until April 13, when he began to vomit and suffer abdominal pain. When he lapsed into a coma, his family took him to the hospital emergency room. An X-ray of his abdomen revealed that a Kelly clamp was present under the small intestine.

In an action against the two operating physicians and the hospital, a jury returned a take-nothing judgment. Affirming the decision, the appellate court said that the findings that the physicians and hospital were not negligent in leaving the clamp in the patient's abdomen was not so contrary to the great weight and preponderance of the evidence as to be manifestly unjust. Evidence of the custom of medical care, while not conclusive of negligence in a malpractice action, was some evidence of the

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THE CITATION is a newsletter on medicolegal issues prepared by the Office of The General Counsel of the American Medical Association.

standard of care. Leaving a foreign object in the body during surgery did not necessarily constitute negligence as a matter of law, the court said.

A Medicare-Medicaid regulation requiring that the first assistant in major operations be a qualified surgeon in order for the hospital to be eligible for Medicare or Medicaid participation was inadmissible. The court said the patient was not a Medicare or Medicaid patient and there was no showing that the regulation established a standard of care for medical practice generally.—*Kissinger v. Turner*, 727 S.W.2d 750 (Tex.Ct. of App., March 19, 1987; rehearing denied, April 30, 1987)

Medical Malpractice Suit Barred By Time Limit

A physician was entitled to summary judgment in a malpractice action against him, a New York appellate court ruled.

The patient last saw the physician for his heart condition in February 1982. Disgruntled with the treatment he was receiving, the patient began seeing another physician. In June 1983, the patient was admitted to a hospital. Hospital records indicate that he stated that the second physician was his treating physician and that he was a former patient of the first physician. Since the patient's treating physician was unavailable, the patient attempted to contact his former physician. He was not in, but another physician who shared office space agreed to see him. After being discharged from the hospital, the patient continued to see his treating physician and did not return to his former physician's office.

The patient filed a malpractice action against his first physician on November 26, 1984. After discovery proceedings, the physician moved for summary judgment on the ground that the action was barred by the statute of limitations. A trial court granted the motion, and the patient appealed.

Affirming the decision, the court said that the continuous treatment rule did not apply to extend the period of limitations for the patient's claim. The treatment rendered by the physician who shared office space with the defendant physician was intermittent and was not a continuation of the treatment by the patient's former physician. In several places in the record, the patient indicated that he lost confidence in his former physician, no longer considered himself a patient of that physician, and only contacted his office in June 1983 because his treating physician was not available. The court said the facts revealed that the patient had terminated the physician-patient relationship by May 7, 1982, at the latest. The action was barred by the two and one-half year statute of limitations.—*Diller v. Munchmeyer*, 515 N.Y.S.2d 642 (N.Y.Sup.Ct., App. Div., May 14, 1987)

New Trial For Claim Of Unnecessary Eye Surgery

A patient was entitled to a new trial on her claim that a physician had induced her to submit to unnecessary eye surgery, a Georgia appellate court ruled.

The patient filed an action against the physician for damages alleging fraud, deceit and misrepresentation in inducing her to submit to unnecessary eye surgery. She also claimed that the physician misrepresented the condition of her eye before the operation. A jury returned a verdict in favor of the physician, and the patient appealed.

Reversing the decision, the court said that the trial court erred in prohibiting her from introducing evidence of similar transactions committed by the physician. The physician had earlier been charged in a disciplinary action with performing unnecessary surgeries and entering false information on a surgical report. That disciplinary action was settled by a consent order. The trial court ruled that the proceedings of the disciplinary board were not subject to discovery.

The appellate court disagreed, saying that the board was not a medical review committee formed to make in-house examinations of the adequacy of the treatment afforded its patients. The court said that the goal of promoting candor among the staff of medical care facilities and members of medical professional societies would not be accomplished by applying the exclusionary rule to the disciplinary board. The court said that the evidence the patient sought to introduce should not have been excluded based on the exclusionary rule.

The court said that the issue before the jury related to the fraud and deceit of the physician, not to the negligent performance of a surgical procedure. The disciplinary board's evidence concerning the physician's false operative reports after surgery and the evidence relating to excess operations he performed was admissible to show his propensity to perform such operations and his intent in persuading the patient to submit to surgery. Any evidence in the records pertaining to his postoperative treatment of other patients was irrelevant, the court said. The information contained in the consent order, which contained the details of his disciplinary punishment, was not significant to the patient's claim and was not admissible, the court said.—*Davenport v. Kutner,* 356 S.E.2d 67 (Ga.Ct. of App., March 17, 1987; rehearing denied, April 1, 1987)

Editorial

Guest Editorial

The Coming Sex Change in Medical Practice

What will medical practice be like as the number of women physicians constantly increases over the next 10 years? Some people outspokenly predict that these women will adversely affect traditional doctors' expectations. I think these changes will be good for society as well as for physicians themselves.

An opinionated article written by a Washington, D.C., area neurologist has been on my mind periodically ever since I read it, for I also think the trend he focused upon will significantly affect medical practice in the future.

Doctors Resembling Nurses

The newspaper article, written by Richard Restak, M.D., was entitled "We Need More Cheap, Docile Women Doctors" (*Washington Post,* April 27, 1987). It cited statistics that in 1985 over a third of all medical students were female; the figure is approaching 50 percent in some excellent schools. As they finish their education and residency training, the sex composition of medical practice will surely change.

Dr. Restak suggested that a female-dominated profession may be good because our changing health care system requires "a mind-set that values cooperativeness and malleability, traits that come more easily to women than to men." The women doctors, he predicted, would earn less pay, be more readily accessible to patients and be more easily managed. And get this: ". . .it's possible that within a decade, the typical American doctor will be similar to a nurse in terms of income, power and autonomy."

He said all those things, not me! And yet as I attempt to describe where I think women physicians will take private practice, logical extension leads toward his conclusions. Except I see them as potentially favorable for society as a whole and for physicians—both male and female—as well. In effect, Dr. Restak took the predicted directions and made them unattractive to traditional private practice; I take them as part of a still broader perspective.

Good Women Doctors

The medical profession suffers from a public perception that physicians are haughty, relatively detached from real concern about their patients. I'm afraid the public is right in a great many cases. In my experience with female physicians even up to now, they exhibit a greater degree of empathy for their patients. And I've certainly not gotten any indications that these women are less well trained or less clinically astute than their male peers.

Newer-generation physicians of both sexes generally seem to have a better perspective of the balance between their personal and professional lives. I see this trait even more strongly among female doctors who, even in this era of women's lib, have a biological obligation above and beyond that of men. To the extent it flavors how male doctors handle their total lives as well, even medicine will be the better for it.

Given these characteristics, I see women physicians less caught up in hospital and medical society politics—and more caught up in direct patient concern. They avoid the subtle infighting at which so many male doctors are masters, always in the guise of "quality medicine" and "concern for the patient." Even if private practitioners lose a little bureaucratic turf, as Dr. Restak predicts, society and health care may be better served by doctors more genuinely caring for their patients than for their positions in the professional scene.

Financial Trend

The women physicians I deal with are by and large as insistent on fair pay for their services as are men. As part of their broader perspective, however, they seem less willing to sacrifice true patient concern and family life for disproportionately high incomes. While I enjoy working with some super-producers, I'm not always convinced those men are really doing the best for themselves, their patients or even society.

I expect a whole slew of other factors to depress doctors' incomes in the next years anyway. Perhaps female physicians' different priorities will be still another factor, but I doubt if they will be determinative. Regardless of how women affect this situation, doctors should continue to enjoy high incomes because what they do will continue to be important to the public.

So, I see the coming "sex change" in medical practice as being a good thing. It may make private practice different in many ways—most of which will not be liked by doctors rooted to the present and the recent past. But there's good reason to have faith that society will be the winner.

Leif Beck

Leif Beck is editor and publisher of *The Physician's Advisory.* This article originally appeared in the June 1987 issue of that publication.

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A GREAT WAY TO SERVE

The President's Page

Summary of Presidency

As I write this twelfth and final "President's Page," it becomes more evident that some of the subject matter being written about may become outdated before the column reaches print. This is especially true this year, as several of the items discussed will have not reached resolution until after *Connecticut Medicine's* deadline. Dr. Massey and staff are most considerate.

Before presenting the customary summary of what has transpired during the president's tenure, I'd like to offer some observations on the presidency and the society. The president's tenure is inevitably in a fluid state. No sooner is one crisis met and dealt with than there is another. By the time he becomes familiar and acquainted with all those involved in the society's processes, and they with him, his tenure is just about over. Maybe the society, through its council, should begin to consider the possibility of having the president's term become two years rather than one. There are too many important things happening in medicine today for agendas to seem just "to happen."

It may also be time for the society to do some introspection and to reevaluate itself. Maybe it should do as its commercial corporate brethren do: periodically have its goals—past, present, and future—reviewed, reassessed, revised, or deleted if necessary, and affirmed or reaffirmed. Its relationship with the counties should be looked to for strengthening and for eliminating overlapping functions, for such functions in the long run cost the dues-paying physician. The society seems so often to be always responding to crises, and not promoting its own agenda. The organization is becoming so involved with responses to issues that it is being taxed to capacity at both the physician and administrative staffing levels. Over the years, times have changed; so should the society. It has become apparent that a reevaluation and redefinition of the function of the elected officers and the administration must be considered. Bringing the society into the world of modern business, with our own computers—in house, as well as networking with the counties and physicians—and leading the way, is a goal being pursued. "Faxing" may be considered. Bringing to its members services that the hospitals and other health-care providers so willingly are doing should be examined.

We have met the crisis of malpractice insurance with CMIC, the crisis in health delivery with MD Health Plan, and the crisis in peer review with CPRO. Unfortunately, for one reason or another, none of these have done anything to enhance society revenues. All progression must come out of dues. Maybe other possible revenue enhancing ventures should be considered. A step in that direction has already been made in the Group Purchasing Plan just being implemented by the society. The formation of a financial institution to serve physicians, such as a bank, should be considered.

Many of these considerations, examinations, evaluations, studies, etc., are not inexpensive, but they cost. However, the society must think positively. Its members must think positively. They must remember that the society is their only defender in this era when others are faulting the medical profession for all the ills of the world. Updating and streamlining is necessary to maintain an efficient organization to meet their needs. So much for my thoughts on the presidency, projected for your information.

It seems as if it were only yesterday that I was installed as president. The year has passed so quickly; I hope that means that it was a good year! It has certainly been an interesting one, and a lot of fun. May I thank you all for having given me the opportunity to represent all the physicians of the state.

Last year, the issues facing us were essentially three. The first was that of preventing the total emasculation of the Tort Reform bill of 1986. Physician areas *were* excluded in the tort *de*form that the legislature enacted in 1987.

The second issue was that of triplicate prescriptions. The bill proposing them last year was defeated at the end of the long session. However, this year, the governor reportedly came back from a meeting of the New England governors with the issues revived. As a result, he had it funded in his budget, and there was no stopping it by any rational means in the House. It must be understood that the bill was aimed directly at physician abuse, not at patient abuse. The patient's name is not even to be sent to the state. The cost will be borne the first year partly from a federal grant, so the prescription blanks will be free the first year. However, no one talks about the costs thereafter. Those who practice along the border with New York know that their triplicates have done nothing to curtail drug abuse in New York, and have only resulted in a pile-up of cartons of triplicates in Albany that no one seems to know what to do with. Also, we know that Medicare and other fiscal intermediaries will not pay for them. With committee legislators saying that the doctors were not against the "triplicate bill," the best that could be obtained was the protection of the physician's confidentiality. However, as of this writing, the House has passed legislation that violated that which the leadership wanted enacted in order not to stir up intense physician opposition. In the Senate, it is hoped that promised opposition will materialize.

The third issue was mandatory assignment. As you know, last year the Speaker of the House held the voting machine open for an unprecedented twelve minutes and came up one vote short on the original "Mandatory Assignment" bill. Seventy-four legislators remained loyal to us under the pressure of over 1,000 seniors sitting in the gallery silently threatening them. No one believed that that bill could have been defeated—not the leadership, not the legislators themselves, not the press, no one! It took a parliamentary maneuver the next day to reverse that vote, with amendments that gave responsibility for administrating the program to the Connecticut State Medical Society. However, some of the conditions made it administratively unwieldy. At the Medicare Assignment Advisory Committee meetings of the representatives of the seniors and the physicians, the Commissioner on Aging, and the legislators, it was mutually agreed that the law was flawed in that it required 85% of all the physicians with Medicare provider numbers to participate. The Medicare fiscal intermediary, Travelers, produced about 7,200 physicians with such numbers. The Department on Aging, represented by Commissioner Klinck, recognized that 85% of Travelers' 7,200 would be more than the state society had in its 5,200 members, of whom only 4,200 were active. Over 2,000 physicians were unaccounted for! Further study revealed that most of those 2,000-plus had died, retired, or moved out of state. There was no way, even with 100% acceptance of voluntary assignment by the State Society's members, to meet the 85% condition. The legislators agreed with Commissioner Klinck that correction of this law was needed.

Also, the seniors on the Committee became aware of the cost of administering the program when they were told that there was no money for "mileage" to attend the meetings. As you know, the cost of administering the Courtesy Card Program is being borne by all of you through an increase in the CSMS dues structure. At this time the Department of Aging really doesn't have the funds or the personnel to commit to taking over this program.

On 12 April 1988, in a surprise move, over 600 seniors were bused up to the Capitol by those in favor of mandatory assignment and, like a Greek chorus, led through the chambers intimidating the legislators they either met or sought out. I personally found this action distasteful, especially since they had not opposed correcting the flaws at the Committee meetings. It occurred to me that the originally scheduled third Committee meeting of 13 April was postponed knowing that the busing was going to occur. However, the legislators acknowledged the society's commitment and corrected the flawed law so as to make it workable. On 30 April, they enacted legislation that the society felt was equitable. It would require that 90% of *practicing* physicians be enrolled and that 75% of all submitted Medicare claims be accepted by 31 March 1990. Also, the seniors, and their suppoorters, would be responsible for enrolling 125,000 Medicare eligible seniors by 1 October 1989. Personally I am glad that this issue was resolved and did not wind up in the Supreme Court, for I don't believe that the Court would have supported the flawed legislation, let alone the consitutional issues involved.

Our Courtesy Card Program has been looked upon favorably throughout the country. I have spoken to the issue before the medical societies of Pennsylvania, New Hampshire, Massachusetts, and New York, and Tim Norbeck has done so at AMA meetings in Palm Springs and Chicago, and the American Society of Internal Medicine and the American Society of Anesthesiology meetings in Washington, D.C. It is being viewed everywhere as a model program.

In addition to the three carryover issues discussed above, CSMS opposed and defeated other legislative initiatives this year that were designed to give expanded duties to nurses, physical therapists, nurse practitioners, acupuncture therapists, physician assistants, let alone the pharmacists who wanted the right to prescribe on weekends because we supposedly are not available on weekends! However, be assured that those initiatives will be brought back again and again.

Your state society has just initiated the startup of its Group Purchasing Plan in conjunction with the Connecticut Hospital Association subsidiary. It is hoped that you may find it to your advantage to participate in the savings they offer.

The Council has approved the formation of a Charitable Trust not only to allow the society to participate in support of worthwhile social programs, but to demonstrate that organized medicine is interested in issues not necessarily related to the pocketbook. Current social issues such as the homeless and the hungry are being considered as well.

As this is an election year, it is incumbant upon all members of the society to think now of the candidates they wish to support. You should all consider asking those who are seeking elective office this coming November how they feel about not only overall issues, but, importantly to us, medical issues. We should not feel that doing this is below our professional dignity. We only have to look at the legislation of the past few years to see that others have looked to their interests and supported candidates favorable to those interests. And they are continuing to do so right up to this very moment.

On the national level, legislation has been tailored to provide economic incentives to join the universal acceptance of government price controls. When enough physicians have succumbed to those incentives, the accomplishment of the goal of a socialized health system will have been attained—without statute. And it will be proclaimed that the physicians, by all joining, wanted it! I suggest that you become familiar with the aims of the National Center for Economic Alternatives, an offshoot of the Institute for Policy Studies, and decide for yourself if you want to vote for candidates who endorse their call for complete nationalization of health care, with doctors working as salaried employees of HMOs under local control.

Regarding AIDS, in accordance with the principles of ethics of the American Medical Association and guidelines promulgated during the past year from the Center for Disease Control of the United State Public Health Service, the CSMS encourages all members to provide diagnosis, treatment, and educational services to patients, as well as to the general public.

Of great importance to all physicians is the upcoming resource-based Relative Value Scale study being done at Harvard's School of Public Health by Dr. Hsiao and associates in cooperation with the AMA (which was not allowed to bid on the contract because the FTC ruled it would be antitrust). I again ask that you all make no judgment of the study until it comes out. The Congress mandated the study in order to find a way to reduce physician's fees. The catchword is "Beneficiary Protection,"—which reportedly is a euphemism for "Mandatory Assignment." HCFA wants capitation, not RVS, for RVS doesn't control "volume," ie, rationing. There are all sorts of rumors about the Relative Value Scale study, some probably unfounded, others not so. But, be assured that the AMA will look at it closely before either endorsing or rejecting it when it is submitted to the Department of Health and Human Services Secretary on 14 July 1988, as will Congress after 14 August 1988. Dr. Eli Ginzberg, an eminent authority on health matters for over 50 years, has indicated that the Congress will probably subvert the RVS study, and he feels that the AMA must wind up speaking for all physicians. One specialty group, after they thought they had made a deal with HCFA, suffered an arbitrary cut in the budget passed two nights before Christmas. The AMA hopes that if the study is adopted, it will have some input into the agreement regarding what the resulting fees will be. Obviously, the AMA does not want to see the various specialities cut down one by one, and has a very good review of the subject in the 15 April *American Medical News*.

As for CMIC, the CSMS sponsored medical liability company, the transition has been completed, and operations are proceeding smoothly. Hopes for steady rates due to increased capacity in London *may be* dimmed because of the reportedly "fair" Tax Reform Bill of 1986 which willl cost CMIC an estimated $15 million in increased taxes over the next three years. Unless legislative relief is obtained, this will somehow have to be reflected in the premium rate structure. So it seems that while we expend our efforts to contain costs and become more efficient, the Congress is raising our premiums in the guise of "fairness."

The long-term care of the elderly, which has been a "hot" topic nationally, has taken the form of *no* real relief from nursing home costs. Costs have actually increased as Congress has "dumped" a lot of minor formerly covered items onto families. Congress's "catastrophic care" bill is more concerned with developing a standard medication list that physicians may not deviate from than with the care of the elderly in nursing homes.

May I congratulate all of you for convincing your peers to support not only your county organizations, your state society, but also the AMA, which has recognized our enrollment exceeding 4,000 members by authorizing the sending of two more representatives to the June meeting of the AMA House of Delegates. Also, the formation of a Hospital Medical Staff Section will give us two more delegates there.

I would like to thank all of you for your kind support and understanding during my difficult tenure. The support of Tim Norbeck, our Executive Director, Josephine Lindquist, our Associate Executive Director, the CSMS staff, the Council, our past presidents, our lobbyists, Sullivan & LeShane, and the various county organizations has been appreciated. The president is supposed to represent the physicians of the whole state, and with their help and assistance, I have endeavored to do so at all times.

Norman Zlotsky, M.D., our incoming president, has been very helpful to me during the year. As I indicated earlier, the president's tenure is always in flux. Norm will have some of the same issues to face; I'm sure there will be new ones; and I'm sure he'll have new crises. I am confident that he will represent the physicians of the state with due diligence and that he will promote ". . .the art and science of medicine and the betterment of the public health."

James P. Orphanos, M.D.
President

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Reflections on Medicine

Someone's Cost Is Another's Gain

ROBERT U. MASSEY, M.D.

"When the talk comes to money, all other values fly out the window." A veteran hospital administrator once reminded me of this when we were comparing hospital and medical school administrative issues, "not always," he added, "but more often than you would think, and usually in disguise." We recalled that when someone protests that it is not the money but the principle of the thing, it's the money.

Not economics, but money; they are not the same: money, in the sense of the value that drives other values out, is always someone's money, either actually or potentially, a token of his power and status. Economics, on the other hand, is an impersonal social science having to do with the production, distribution, and use of goods and services; hence everything imaginable may have an economic value, expressible in dollars and cents, but money in that sense only helps us to think about things in relation to each other; it lets us compare apples with oranges.

In my high school chemistry book there was a sketch of a man with a caption underneath, "Worth 38 Cents," or some such amount; by 1975 the price of all the chemical elements in our bodies had been inflated to $0.95, according to a birthday card that the biochemist Harold J. Morowitz received from his children. He then proceeded to check prices on the complex biochemical constituents of our bodies and found that, instead of 95 cents, we were really worth $6,000,015.44, in 1970s dollars. "A moment's reflection," he wrote, "shows that even if I bought all the macromolecular components, I would not have purchased a human being. A freezer full of unstable molecules at -70° C does not qualify to vote or for certain other inalienable rights."[1]

Sometimes our value is expressed as net worth; courts may calculate what someone could earn in a lifetime and assign that figure to serve for the value of his life. Politicians consider that each of us, except children, is worth a vote, which in turn may be given a value by dividing total votes into campaign costs.

In some of the arguments for limiting medical care for the aged we hear that all that money spent to prolong dying in intensive care units should be used to provide better prenatal care, or immunization for poor children, or better health education; that we are squandering money on lives not worth it. In Europe, we are told, the burden of care for the elderly, the transfer of money from working men and women to retirees, is becoming a heated political issue. It clearly is an economic issue in America as well; we should do our best to keep it from becoming a matter of money.

Caring for the frail, disabled, and sick elderly, even though they are a small number of the 25 million healthy older men and women, represents a substantial portion of health care costs; whatever is a cost for one is always gain for another. Profits, jobs, and professional careers are at stake.

We are at the beginning of a national debate over the care of the elderly and the terminally ill; the furor over "It's Over, Debbie" several months ago,[2] and the animated reviews of Daniel Callahan's *Setting Limits*[3] suggest the depth of feeling around these issues. All the talk of rationing care is really about how much medicine is enough; too often the issue is stated in money terms, how much does it cost? Some blame physicians for their heroic, but misplaced efforts: "You can't face your own mortality," our amateur psychologist critics tell us. Others blame old people and the dying: "They grasp for every day and hour, they want everything done."

In my own experience neither is true, or at least not often. As we talk about these matters among ourselves, and then with administrators, policy makers, and those who derive profit from "the health care industry," we should remember that, while we may stick to the high road, respecting patient autonomy and following informed clinical judgment, there will be those whose money interests may be threatened. The half-way technologies are both expensive and profitable; good nursing care, hospice care, home care, just standing by and trying to be of some use are unlikely to appeal to major investors and eager entrepreneurs. When they talk money, all other values do indeed go out the window.

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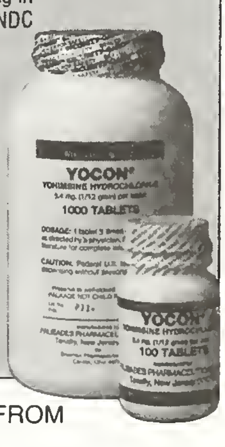

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LAW, MEDICINE AND PUBLIC POLICY

Treating AIDS Patients: Clarifying the Physician's Duty

JOSEPH M. HEALEY, J.D.

Attempts to identify the responsibilities of physicians to assure that AIDS patients receive appropriate medical care have focussed upon an examination of applicable legal principles, of relevant moral principles, and of professional codes of ethics as the sources of legal and ethical duties. As described in my last two columns, none of the three sources has provided a clear and comprehensive basis for imposing an enforceable duty upon doctors to treat AIDS patients. Legal principles governing the establishment, continuation, and termination of a physician-patient relationship are rooted in contract theory and emphasize the voluntary nature of the relationship. Though the physician has a legal duty to avoid abandonment following the establishment of the relationship, there exists no general legal obligation to provide care to one who is not already the doctor's patient. Even when moral principles or professional ethical principles imposing a duty to treat have been identified, the absence of an enforcement mechanism has undermined the effectiveness of such a requirement. One potential strategy designed to overcome these limitations is the policy of some hospitals to require its employees or those who have hospital privileges to treat in a nondiscriminatory manner patients who are HIV antibody positive, have ARC, or have AIDS. Failure to provide such treatment would result in suspension or dismissal. A second potential strategy involves the use of the licensure system to impose a legal obligation to treat upon licensed practitioners. Since this approach may be used in the future and since there has not been much discussion about its use until now, it will serve as the focus of this month's column.

It is a well-established legal principle that there is no right to practice medicine or any other licensed health profession. As an exercise of its "police power," the state's inherent authority to regulate conduct to protect and promote the public's health, safety, and welfare, the legislature may limit who may engage in health care and how their practices may be regulated. A typical regulatory scheme begins by identifying an area of conduct generally prohibited to citizens, using language such as "No one shall engage in the practice of medicine..." Such a prohibition is generally followed by a description of how exceptions are to be identified, what criteria and procedures are to be used in making such a determination, and who is responsible for developing and applying the criteria and procedures. In a usual situation, this authority is vested in a state administrative agency, such as a Board of Licensure or Registration, which operates within the boundaries established by the state legislature. Among the criteria are usually included demonstration of appropriate education and training, successful performance on compentency examinations, and appropriate evidence of personal character. This system reflects the underlying premise that medicine and other regulated health activities are social acts subject to societal regulation. In permitting physicians to perform acts generally prohibited to citizens in society (thereby creating a monopoly), the society is considered justified in requiring the involvement of the medical community in the achievement of important societal goals and in the satisfaction of legitimate societal needs. The imposition of such duties has been justified as an acceptable *quid pro quo* in return for the granting of a license to practice. The need to assure that AIDS patients receive appropriate medical care could be viewed as such a societal goal and the imposition of a duty to treat or to avoid discrimination in treatment could be viewed as a legitimate societal expectation. There are three ways that this could happen. A statute could be passed creating such a duty for all licensed physicians. An administrative agency regulation could be developed imposing such a duty as a condition of licensure. Existing criteria prohibiting "unethical conduct" by licensed physicians could be applied to the failure of a physician to assure that patients who are HIV antibody positive, have ARC, or have AIDS receive appropriate care.

One hopes it will not be necessary to use the coercive power of the law to assure that physicians and other health practitioners satisfy their ethical obligations to those who are HIV antibody positive, have ARC, or have AIDS. Most health professionals have responded to the challenges provided by AIDS in a manner consistent with the highest ethical traditions of their professions. Should widespread problems arise, the licensure system may well be used to assure responsible conduct occurs.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

CRITICAL CARE HELICOPTER SERVICE: EVALUATION OF PREHOSPITAL UTILIZATION IN TRAUMA CARE

To the Editor: This article by Schwartz and Jacobs (*Connecticut Medicine*, April issue) is a study to evaluate the ability of prehospital trauma care providers to assess the need for air ambulance at the accident site based upon the examination and classification of the more seriously injured. They conclude that more seriously injured patients transported by helicopter to a trauma center had a better chance of survival than similar patients transported by ground ambulance.

Helicopter transport provides rapid transport when great distances are involved between the accident site and trauma center; hence, the greatest value for the use of the air ambulance is a rural and wilderness patient rescue and transport, according to Mattox and Champion.[1] The use of helicopter transport in urban and suburban areas is to reduce the transport time from the scene of the accident to definitive care at the trauma center. The authors have shown statistically the survival of more seriously injured patients did improve when air ambulance was used in transporting these patients to the trauma center. The questions however remains, was this increase in survival due to the rapid transport by the air ambulance as compared to the ground ambulance, or was it due to the access of a trained physician, flight nurse with critical care experience, and flight respiratory therapist in attendance during the helicopter transport? The patients transported by ground ambulance did not have access to the *same* type of prehospital care in transit.

Information regarding the 1) time of injury 2) time of departure from the scene of the accident 3) time of arrival to the trauma center for both the ground and air ambulance would be of interest as to how much time was indeed saved, if at all, in getting the patient to the hospital for definitive surgical care by air ambulance. Raw data concerning actual survivors and non-survivors and their respective trauma score and ISS would have further enhanced the authors' conclusions. It is difficult to conceptualize the authors' data based upon Z score alone.

Kirk K. Kazarian, M.D.
Stamford, CT

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The above letter was referred to the authors who offer the following reply:

To the Editor: The following is in response to Dr. Kazarian's comments on the article "Critical Care Helicopter Service: Evaluation of Prehospital Utilization in Trauma Care".

The authors thank the writer for his thoughtful comments. We are in agreement that information regarding the causative factors for the improvement in survival of LIFE STAR patients when compared to ground transported patients is the next important analysis to be completed. There are three components of the LIFE STAR program that could contribute to this. First, access to rapid transport; second, the availability of the skilled flight crew to the patient at the scene of the injury; and third, transport to the appropriate hospital.

We agree that patients transported by ground ambulance did not have access to the same level of care. In answer to Dr. Kazarian's question, we believe that both rapid transport and access to a trained physician, flight nurse with critical care experience, and a flight respiratory therapist is contributory to the increased survival of LIFE STAR patients. Other factors which may be contributory to survival are the destination hospital and the definitive care received at that hospital.

A statewide trauma registry would be useful to compare all ground and air transported trauma patients. It would also provide a means for quality assurance, education, and surveillance for preventive interventions. The prehospital care arena provides the researcher with considerable barriers to adequately identify the impact of time and interventions on patient outcome. It has proven very difficult to accurately obtain prehospital information on patients transported by ground for a variety of reasons related to verification of data elements, interobserver error and record keeping.

The end result of such a registry would be a better understanding of trauma care and variables resulting in improved survival for trauma patients in Connecticut.

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DISPENSING BY PHYSICIANS

To the Editor: **ADVERTISEMENT: "LOWEST PRICES FOR PRESCRIPTION DRUGS BY ANY PHYSICIANS IN CONNECTICUT. WHILE YOU'RE IN OUR OFFICE LOOK AT OUR BARGAINS IN COSMETICS AND PAPER PRODUCTS."**

Headline: **"Physician Sued for Dispensing Incorrect Medication."**

Headline: **"Generic Medication Stocked in Physician's Office Found to Be Expired."**

Headline: **"Physician Loses License for Unethical Abuse of Prescribing Privileges."**

Are these the ads and the headlines of the future? I am fearful of a dangerous new practice (actually, it's a revival of a dangerous *old* practice,) of physicians dispensing of medications from their offices. [I am not referring to the time-honored benevolent "giving" of free samples, to poor patients, or when pharmacies are closed.]

Apologists for this practice are people with a self interest in seeing the practice spread; the companies who re-package drugs for this purpose, and the few physicians and clinics who participate in this compromising practice.

There has to be a conflict of interest, at least part of the time. If you make a profit on a prescription, will you be tempted to prescribe more often? Furthermore, physicians with a limited supply of medications may decide to prescribe and dispense what they have on hand, rather than what may be exactly right for their patients. Even if a doctor has the holiest of motives (usually cited are patient convenience and supposedly lower cost) this practice gives the *appearance* of unethical behavior, and even for that reason alone should be stopped.

There is no way a physician can have the fund of information that a pharmacist, who spends five years earning his degree, can have about the interactions and side effects of medications, or about which brands of a generic medication are the safest, most bioavailable, or least expensive. Nor can a physician, with a limited stock in his office, have the cheapest, or freshest medications on hand.

If this practice drives pharmacies to close, (they are already hard-pressed by competition from mail order drug companies, discount stores, and super-markets,) the public will suffer in the long run. Physicians and patients need pharmacies and pharmacists for prescription, and non-prescription medications, and, if lowest cost *is* an issue, for price competition. (Although price should not be the *only* factor in purchasing medication.)

Those few physicians who dispense medications for profit, in many instances betray their patients' trust. Patients are right to suspect monetary motives for this practice. I think that most doctors do not do this *because* it can be unethical, and usually not in their patients' best interest.

Furthermore, it is not in physicians' own interests either. We should treat pharmacists as our allies, our colleagues; NOT as competitors. They can help advise US about prescriptions, and they serve as a vital safeguard for prescribing errors we may inadvertently make.

Jesse Samuels, M.D., FACEP

West Hartford, CT

AROUND THE STATE

More than 6,800 visitors attended the Hartford County Medical Association's **Medical Expo 88** at the Hartford Civic Center on 20 and 21 April. This was 1,800 more than attended last year.

The AIDS Crisis: Educating the Health Care Community was the topic of three symposia held during the two-day exposition. Speakers included Alvin Novick, M.D. of Yale, Kathleen Nolan, M.D., of the Hastings Center, Frank Reardon, Esq., and Jay D. Smith, M.D., of Aetna for the first session. Robert Gallo, M.D. of the National Institutes of Health and Franklin Volvovitz, President of MicroGen-Sys, Inc., were speakers at the second session. The third session on the AIDS crisis included presentations by Peter Drotman, M.D., of the Centers for Disease Control and Walter Hierholzer, M.D., Chief Hospital Epidemiologist at Yale-New Haven Hospital.

A Regional Approach to AIDS was presented by state health commissioners from Massachusetts, Rhode Island and Connecticut. Frederick G. Adams, D.D.S., M.P.H., Commissioner of Health Services for the State of Connecticut; Mary Ann Hart, R.N., Director of Health Policy, State of Massachusetts; and H. Denman Scott, M.D., Director of Public Health for the State of Rhode Island. *Referral Resources for Health Care Professionals* was presented by James H. Donagher, AIDS Coordinator for the Connecticut Alcohol & Drug Abuse Commission.

Later on 21 April, a panel discussion of **The Nursing Shortage** was moderated by Robert U. Massey, M.D., and included panelists Gardner E. Wright, Jr., Coordinator of the Governor's Task Force on the Nursing Shortage; E. Carol Polifroni, R.N., Acting Dean of the University of Connecticut School of Nursing; Edward Johnson, D.D.S., vice president of St. Francis Hospital, Hartford; Roger S. Beck, M.D., vice president of Clinical Programs at Hartford Hospital, and Diane Eib, R.N., head nurse in the C.C.U. at Manchester Memorial Hospital

Jerome E. Evans, M.D. has been elected president of the New England Chapter of the American Society for Adolescent Psychiatry.

Howard J. Wetstone, M.D. received the Dr. A.E. Hertzler Knox Award for excellence of contributions to emergency medical services in Connecticut at the 1988 EMS convention. It is the highest honor bestowed by the State Office of Emergency Services.

BOOK REVIEWS

Medicine on Trial: The Appalling Story of Ineptitude, Malfeasance, Neglect, and Arrogance

By Charles B. Inlander, Lowell S. Levin and Ed Weiner. 304 pp. New York, Prentice Hall Press. 1988. $18.95.

Professor of public health at the Yale University School of Medicine and one who should know better because of that affiliation, Lowell Levin has rendered a grave disservice to medicine and the public through the publication of his book, *Medicine on Trial*. In fact, it is he who should be on trial because the burden of proof for his many undocumented charges rests with him. This compendium of alleged medical failures is presented to the reader in the same old and familiar unfair tactic of asking "when did you stop beating your wife?"

The underlying theme of the book, from its front jacket to the foreward, introduction, inner pages, and back jacket, is to doctor-bash and discredit all of medicine. "It hurts to do this," Levin was quoted in a state newspaper in reference to *Medicine on Trial*, and then he explained how he was going on an 11-city tour during the next two months (including an appearance on NBC's "Today Show") to promote his book. Somehow one gets the feeling that the pain didn't last very long. Space limitations will not permit me to deal with even a majority of his wild claims and allegations, but let me address some of them.

In the introduction, Levin and his coauthors tell us that "our data were studiously and carefully accumulated," and then they spend the rest of the book disproving that statement. For example, the back jacket claims that "among the shocking revelations documented in *Medicine on Trial* is that one out of every six drug addicts is a doctor." Their documented evidence? A mere reference to an obscure 1975 book (issued by a publishing company that has gone out of business), which in turn gives no sources. Forget that no one person or organization has any real handle on the actual number of drug addicts, but consider the seriousness of such a charge without a scintilla of evidence to back it up.

Early in their "expose," the authors suggest that many anesthesiologists do not follow good practice and visit an in-hospital patient at least one day before an operation is scheduled so that important information can be taken about allergies, heart problems, etc. They claim that "anesthesiologists often slip into the hospital room during the late hours of the night before the operation, make brief introductions and ask cursory questions. . . .Many patients," they assert, "first 'meet' their anesthesiologist or nurse-anesthetist only at the moment they are wheeled into surgery, mere minutes before the cutting begins."

I telephoned Ellison C. Pierce, M.D. in his Boston office to discuss this allegation. Dr. Pierce, a past-president of the American Society of Anesthesiologists and the current President of the Anesthesia Patient Safety Foundation, told me that the "overwhelming majority of patients are seen in the afternoon or evening before the operation if not earlier. Clearly," he continued, "100% of good anesthesiology departments see their patients ahead of time and have done that for years." The authors also omitted an important fact pertinent to this issue. Today's third party insurance carriers often demand that the surgery is performed on the same day as the patient is admitted to the hospital. Such situations almost necessitate a visit on the same day as surgery, a fact that they "carefully and studiously" manage to leave out of their criticism.

It is obvious to the reader that the authors are promoting doctor bashing as a spectator sport. They treat the matter of diagnoses as if one were inspecting fan belts or broken china. Physicians are human beings and medicine is not a perfect science. Everything is not reduced to a computer readout. Judgments have to be made on the information available but then, of course, they should know that.

Are we to assume that they are serious in proposing that a patient should bring a friend or relative along into the examining room? Why not a lawyer and the town gossip, too! This ludicrous proposal doesn't even begin to acknowledge the importance of the patient-physician relationship and the need for mutual trust between them. A third party to the proceedings can only serve to limit the overall effectiveness and necessary confidentiality during the visit.

The authors charge that "nearly 78,000 people develop cancer from medical and dental X-rays every year." According to medical studies, even under the most conservative assumptions, a maximum of 3,600 Americans die annually from cancer caused by radiation from *all* sources. And they neglect to mention that the risks posed by those X-rays are offset by the benefits to the patient.

Other absurd claims, including that of unnecessary surgery, are difficult to refute because no accurate statistics exist. The rates of unnecessary surgery are bogus. Unnecessary surgery has no standard definition and is not recorded by the Department of Health and Human Services' National Center for Health Statistics.

In his foreward to the book, Mr. Charles Inlander, President of the People's Medical Society, asks "why has the honorable profession of medicine kept the facts of its mistakes to itself?" And yet just a few sentences earlier (in the same paragraph), he claims to have taken his "expose directly from the annals of medical and public health research." Come on, Mr. Inlander, you can't have it both ways. Medicine either hides its mistakes or it publishes them.

Daily newspapers often report on articles in medical journals by physicians uncovering the dangers of this or that mode of medical or surgical treatment or diagnosis. Just who do the authors think report these things to researchers if not practicing physicians? The entire story of modern medicine, like other sciences, is one of constant discovery, correction, and refinement. Where have the authors been during the past thirty years of frequent and detailed reporting on malpractice litigation, license revocation actions, physician impairment, and Medicare disciplinary actions? A conspiracy of silence exists only in the minds of those who choose to ignore these reports. If they are trying to suggest that medicine is an imperfect science, then they are quite correct. As H.L. Mencken might have said to such an observation, however, "there is something in what you have to say, but not much." No one is claiming that medicine is without fault. Of course there are mistakes made, and it is unfortunate that medicine is not and never will be a perfect science. Physicians are not gods but human beings who are not immune to human weaknesses and failings.

It is this very reporting by which the medical profession has made itself the most accountable of any in existence. Just look at the record. Physicians are subject to review from state licensure agencies, medical societies, specialty boards, hospital credentialing committees, malpractice insurance company underwriting and claims review panels, hospital quality assurance and utilization review departments, morbidity, mortality, and tissue committees—not to mention the regulatory scrutiny of federal agencies like Medicare and the Drug Enforcement Agency and of state agencies regulating prescriptions, office lab and X-ray facilities, Medicaid, consumer protection, and others. And the authors actually expect the public to believe that the work of physicians is not closely scrutinized?

The only physicians who escape some of this constant surveillance by their peers, reviewers, and regulators are those who practice without hospital staff affiliation and without medical association membership—both of which require that member physicians submit to the professional and scientific judgment of their peers.

Perhaps if Professor Levin had any medical training or availed himself of the excellent medicine being practiced all around him by physicians at the Yale University School of Medicine and its affiliated Yale-New Haven Hospital, he would come to the following inescapable conclusions about *Medicine on Trial.* The authors have pandered to the dogma of sensationalism by playing a semantic con game in interpreting small and unreliable studies in a way that conveniently serve their needs. It would be ludicrous for the public to attach any credibility to this meaningless diatribe against medicine. This book is to responsible journalism what "connect the dots" is to art.

Timothy B. Norbeck
Executive Director
Connecticut State Medical Society

The New Birth Control Book

By Howard I. Shapiro, M.D., New York, Prentice Hall Press, 1988. 306 pp. $17.95

As mentioned in the review by CBS News, "it is all there." The entire panoply of facts and figures concerning everything from rhythm to the morning after pill. It indeed hits at many strata of our inquisitive public. Although I think that it should have said more about the "noncontraceptive values" of the pill, it certainly takes into account many unscientific worries and fears held by potential birth control pill takers. The fact that, when all is considered, the danger of pregnancy (which is indeed quite small) outweighs all other contraceptive measures. A disproportionate discussion is held about the use of the "minipill." By figures given in the book, this is used under 1% of the time and in my own experience, it would even be less than that. This seems to be because the use of a pure progesterone pill offers so many problems in the way of failures, menstrual irregularities, and need for its continued usage, etc., as well as possible thrombotic problems. Furthermore, on discussion of the pill, the importance of high density lipoproteins *v.* low density lipoproteins are well brought out and it would be an advantage for the neophyte in this area to understand its relation to birth control pill usage. One could argue that the book covers the common place knowledge that physicians have, but some of the more scientific facts which are excellently done, are probably beyond the interest or ken of the reading public. In the last portion of the book, for instance, it deals with the "future." Use of the phrase "LH-Rh analog" is probably not of great interest to the lay reading public. On the other hand, it is an extremely up-to-date statement such as subdermal implants for birth control as well as the present status of male contraception.

The book is completely up to date in such matters as the legal status of IUD's and their recent withdrawal from the marketplace. His discussion on laser usage is also an example of the timeliness of this book.

Some important areas which the practicing gynecologist is often questioned on are extremely well done. As an example, the matter of various methods of tubal ligation, as well as those of tubal reversal procedures. Unipolar *v* bipolar sterilization is discussed in detail, although unipolar usage is now defunct for general purposes. Some might take issue with his poor opinion of open laparoscopy, as well as his denunciation of the rarely done, but occasionally needful caesarean-hysterectomy.

A few areas are discussed in detail which seem to have very little to relate to birth control (such as discussion of pelvic floor relaxation and total abdominal hysterectomy *v* vaginal hysterectomy, advantages and disadvantages, etc.). Since it is also stated to be a complete guide for women and men, it is not entirely out of place.

As mentioned initially, this is an overview in which several sections will appeal to various people at various levels of interest and for the reasons discussed above. This will undoubtedly serve as a good resource given this background statement.

Stewart J. Petrie, M.D.
Derby, CT

ALBERT WALDO SNOKE, M.D.

1907 - 1988

Dr. Albert W. Snoke, whose more than 50-year career in health care included more than two decades as director of Yale-New Haven Hospital and chairman positions with the American and Connecticut hospital associations, died suddenly Monday, 16 April. He was 80.

Born 19 July, 1907 in Fort Steilacoom, Washington, he graduated from the University of Washington in 1928 and received his M.D. degree from Stanford University School of Medicine in 1933. During his residency in pediatrics at Strong Memorial Hospital, Rochester, New York, Dr. Basil McLean, then its director, invited him to try medical administration. It became his career.

From Strong Memorial he came to Grace-New Haven (now Yale-New Haven) Hospital in 1946 as executive director, a post he held until 1968. Following this he served as Coordinator of Health Services for the State of Illinois until 1973, and then, along with his physician-wife, Parnie, he continued an active career in consulting and in writing. His recent book, *Hospitals, Health and People,* was released by Yale University Press in 1987, and he had completed a draft of a sequel volume at the time of his death.

Dr. Snoke had served as president of both the Connecticut Hospital Association and American Hospital Association. He was instrumental in the development of the Council of Teaching Hospitals of the Association of American Medical Colleges, and served as its chairman. He organized the Medical Administrators Conference and served as President of the Society of Medical Administrators.

He was the recipient of many awards, including the Distinguished Service Award from the American Hospital Association, the Gold Medal Award for the American College of Hospital Administrators, and the T. Stewart Hamilton Award from the Connecticut Hospital Association.

A person of many interests, he was particularly proud of having been an Eagle Scout, and of having served as a Forest Ranger at Mt. Ranier National Park in his youth. In later years, along with his wife, Parnie, he often served as physician at a summer youth camp in Canada.

He enjoyed investigation and research and was bright and articulate in argument. Perhaps his wife, Parnie, described him best when she used the appellation "Ricki-Ticki-Tavi." It was easy to disagree with him and a challenge to argue with him, but he was a wonderful, a feisty, and a steadfast friend. His love for his family and in a most special way for Parnie, who predeceased him, was touching.

Health care in Connecticut and in the United States is the better for his presence. He has left his mark in the struggle for quality care for all.

Avon, CT

T. Stewart Hamilton, M.D.

The Jill Cohn Center for Head Injury Rehabilitation has opened at Temple Medical Center, New Haven, Conn., under the direction of Eugene B. Piasetsky, Ph.D.

The Jill Cohn Center offers a comprehensive day-treatment program of cognitive, behavioral and social rehabilitation for brain-injured persons. A neuropsychological approach to treatment is implemented throughout a cross-section of real-life settings which will be provided within the facility. These settings include:

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Referrals and inquiries about staff positions should be directed to: Eugene B. Piasetsky, Ph.D., The Jill Cohn Center for Head Injury Rehabilitation, Temple Medical Center, 40 Temple Street, New Haven, Conn. 06510 (203) 787-9941

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From the Executive Director's Office

COUNCIL MEETING

Thursday, March 31, 1988

Attendance

Present in addition to the Chairman, Dr. Guy W. Van Syckle and Vice-Chairman, Dr. M.S. Eslami were: Drs. Ahrens, Beck, Bobruff, Bonner, Chmieleski, Czarsty, Freedman, Kamens, McDonnell, O'Brien, Orphanos, Petrie, Ragusa, Reyelt, Jr., Robbins, Rose, Rubin, Sadowski, Sosa, Villa, Welch, Wetstone, Whalen, Jr., Zanker and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Sullivan, Mr. Brunell, Mr. Staples, Mr. Tomat (FCMA), Mr. Fiorentino (HCMA), Mr. Freberg (NHCMA), and Mrs. Ganguli (President, Auxiliary).

Absent were: Drs. Abbot, Ahamed, Dardick, Fox, Schwartz, Sullivan, Jr. and Upham.

Report of the President

Dr. Orphanos reported that an Advisory Council meeting had been held with physicians, consumers and legislators concerning the Medical Courtesy Card and statistics of medicare providers were reviewed and it appears that Travelers' figures differ from CSMS figures. It is probable that some legislative action will have to be taken amending the criteria set for courtesy card participation. Out of 5,165 eligible providers, 3,769 are now enrolled in the program. He also reported that the contract with the Department on Aging had been signed.

Dr. Orphanos also brought to the attention of the Council, one article that appeared in the *New Haven Register,* March 27, 1988 entitled "Yale Doctor Blasts Medicine in U.S." and another that appeared in the *New York Times* entitled, "Curing What Ails Them." Following discussion, it was VOTED that *Connecticut Medicine* publish a scholarly book review on the book entitled "Medicine on Trial," which would deal with the accuracy of statistics quoted. It was also VOTED that CSMS contact the Dean of the Yale University School of Medicine, Chairman of the School of Public Health and Chairman of the Board of Trustees of the University requesting that they do an objective, scientific evaluation of the contents of the book and report on the findings of the study.

Dr. Orphanos reported that he recently attended an AMA meeting in Chicago, to which all state Presidents and Executive Directors were invited. The purpose of the meeting was to inform the group on the AMA's involvement in the Relative Value Study being undertaken at Harvard. They were informed that the RVS study should not be judged ahead of time and that the AMA would not have joined in the study if they could not add something to the program. Unity was stressed among physicians. The RVS study was mandated by Congress and the AMA wanted to do the study, but were advised by the Federal Trade Commission that it would be antitrust. When it was learned that Harvard had contracted to do the study, AMA offered its assistance and committed itself to making this study work. If it does not come out to their satisfaction, or the physicians of the country, they will oppose it. AMA reported that mandatory assignment, or the new term being used "beneficiary protection," will keep coming up in Congress.

Establishment of a Charitable Trust

Attorney M. Agsten joined the Council to discuss the establishment of a Charitable Trust. She outlined all of the requirements necessary for such a Trust and following discussion, it was VOTED that a Charitable Trust be established by CSMS.

CPR Policy for Pre-Hospital Emergency Care

It was VOTED to approve a recommendation of the Committee on Emergency Medical Service pertaining to the subject that the Council instruct the Committee on Legislation to introduce legislation through the appropriate channels in the Connecticut General Assembly which would allow the terminally ill to avoid being subjected to resuscitation.

M.D. Health Plan

Dr. William Whalen reported that M.D. Health Plan is now in operation five months. The Plan is 14% ahead of projection with 4,015 enrollees in the plan and 11 employers. At the present time, there are approximately 2,500 physicians who enrolled in the IPA and 1,600 stockholders in M.D. Health Plan. A new stock offering will go into effect July 1, 1988. He reported that despite adverse publicity in the press about HMO's, M.D. Health Plan would succeed. At the present time, M.D. Health Plan is looking into joint ventures that would enhance their reserves.

Report on Connecticut Medical Management, Inc. (CMMI)

a. In accordance with Council action that prior to each House of Delegates meeting there should be a discussion and report of CMMI and CMIC activities, Dr.

Orphanos reported as follows: That at the beginning of its fourth year of operation, October 1, 1987, CMIC had 2,256 policyholders and this figure is steadily increasing. Continuing the policy instituted last year, due to reinsurance restrictions, claims-made policies were the only type issued this year. As of March 31, 1988, total assets were approximately $80 million, up from $59 million in October 1987. This includes assets due for premium and finance contributions. Due to increasing volume of business, staffing was increased and additional office space had to be acquired. He reported that he believes CMIC is in good health and will continue to endeavor to provide the members of CSMS with the maximum available coverage at a prudent cost and the best service available. It was VOTED to accept this report as information.

b. It was VOTED to approve an amended copy of the Connecticut Medical Management, Inc. Bylaws. The changes primarily affected the titles of Officers in Article IV.

c. It was VOTED to approve the following list of physicians nominated by the counties for election to the Board of Directors of CMIC:

Richard J. Cobb, M.D., Hartford
Marvin I. Fox, M.D., New Haven
Neil C. Klein, M.D., Stamford
Stephen C. Leach, M.D., Willimantic
William A. Schear, M.D., Hartford
Joseph P. Zeppieri, M.D., New London

IPA & MDEC/MDHP Nominees

In accordance with the IPA and MDEC/MDHP Bylaws, the Council was requested to submit the names of eight physicians for the IPA Board and six physicians for the MDEC/MDHP Board. At least half of the physicians named should be primary physicians. A list of the current of eight physicians for the IPA Board and six physicians for the MDEC/MDHP Board. At least half of the physicians members of the Boards was distributed for information.

It was VOTED to transmit the following names to the House of Delegates for approval:

IPA Nominees: Mahmoud S. Okasha, M.D., Norwich (Psych); Alfred A. Arbulu, M.D., Enfield (Surg); Shelby J. Galloway, M.D., New Haven (Rad); Joseph C. Czarsty, M.D., Oakville (FP); Beatrice S. Desper, M.D., Bristol (OB/Gyn); John W. Edelglass, M.D., New Haven (Derm); James P. Orphanos, M.D., Greenwich (FP); Charles A. Shooks, M.D., Willimantic (IM).

MDEC/MDHP Nominees: Lawrence M. Blum, M.D., Fairfield (Derm); James J. Brady, M.D., Hamden (Ob/Gyn); James P. Orphanos, M.D., Greenwich (FP); Stephen J. Leach, M.D., Willimantic (IM); John J. Fote, M.D., West Hartford (Ped); Norman E. Smith, Jr., M.D., Torrington (Ped).

Committee on Public Health

The following actions were taken on the recommendations of the committee on Public Health:

a. **Health Policy Agenda Recommendations Referred to the Committee**

VOTED to approve the recommendation that "Employers should provide and employees should participate in programs on health awareness, safety, and the use of health care benefit packages."

VOTED to approve the recommendation that "Employers should provide a safe work place and should contribute to a safe community environment. Further, they should promptly inform employees and the community's appropriate public agencies, when they know that hazardous substances are being used or produced at worksites, as now required by federal law and state guidelines."

VOTED to transmit to the CSMS Committee on Legislation for lobbying activities with the Public Health Committee of the General Assembly, to carry out its intent; that "State and local education agencies would incorporate comprehensive health education programs into their curricula, with minimum standards for sex education, sexual responsibility, and substance abuse education. Teachers should be qualified and competent in health education programs."

VOTED to approve the committee's recommendation that the following standard, which is already in effect through JCAH accreditation and state hospital licensure be approved as referred.

> "To fulfill their fundamental responsibility to maximize the quality of their services, health care institutions should establish, through their governing body, a formal structure process to evaluate and enhance the quality of their health care services. This should be accomplished by participation of the professional staff, management, patients, and by the general public. When appropriate, health care institutions should be urged by licensing and accrediting bodies to establish a formal committee to coordinate all quality assurance activities that occur among the various health care professions with the facility."

It was further VOTED to approve the recommendation that it be extended to long-term care and ambulatory care settings.

b. **DWI Law**

VOTED to approve the recommendation that CSMS go on record in support of an "Administrative per se" DWI law now before the General Assembly which would permit an arresting officer, upon the suspect's refusal to submit to an alcohol level test or upon a finding of a BAC of 0.1% or more, to take the driver's license and issue a temporary 30-day permit pending a hearing.

c. **AIDS Policy**

A resolution on the AIDS policy which was referred to the Committee on Public Health from the CSMS Committee on Legislation "that the Committee on Public Health consider mandatory testing for all surgical patients prior to surgery to be an acceptable practice" was discussed by the committee and it was the consensus of the committee that, "given current realities of reliability and informed consent, HIV testing of a low risk population is not appropriate, but that testing of patients in high risk groups with proper informed consent is appropriate, and they voted to recommend that mandatory testing of all presurgical patients be rejected as policy." Following discussion, it was VOTED to send this action of the Committee on Public Health to the CSMS Hospital Medical Staff Section for their opinion on this subject as soon as possible.

Medicare

In response to a request from the Council to the Ad Hoc Committee on Medicare to undertake a study of the problems being faced by physicians with Travelers Medicare, it was reported that the Ad Hoc Committee met and established the following priorities to discuss with representatives from Travelers: communication problems, changing of CPT Codes, specialty groupings for the determination of prevailing charges and the medical necessity issue. A meeting is being set up with Travelers in the near future to discuss these issues. The Ad Hoc Committee also reported that meetings with senior groups will be set up in hopes of educating the public and changing the public perception of the physician. There are also many issues that need to be confronted on the federal level and an attempt will be made to establish contact with Connecticut legislators to discuss some of the issues. It was VOTED to accept this report as information.

Bylaw Amendments Establishing a Hospital Medical Staff Section

It was VOTED to place on the table at the House of Delegates meeting the proposed bylaw amendments submitted by the Committee on Hospitals establishing a Hospital Medical Staff Section.

Auxiliary to CSMS

Mrs. Ganguli, President of the Auxiliary, presented a resolution entitled "Continuing Auxiliary Efforts Toward the Eradication and Use of Illegal Drugs and the Illegal Use of Legal Drugs" which is to be introduced at the June meeting of the AMA Auxiliary House of Delegates. It was VOTED to approve the resolution so that Connecticut's name can be added to the list of states submitting the resolution.

Mrs. Ganguli further informed the Council that she has been asked to serve as a member of the Reference Committee on Health Issues at the AMA meeting and also been asked to serve on the Board of the Connecticut Communities for Drug Free Youth, which is affiliated with the National Federation of Parents for Drug Free Youth. The Council expressed its approval of the concept of a Medical Family Support Group which is being established by the Auxiliary.

The next meeting of the Council will be at the call of the President.

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on March 31, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

NOTICE TO CONTRIBUTORS

Members of The Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Authors preparing manuscripts for submission to *Connecticut Medicine* should consult **INFORMATION FOR AUTHORS**. This material may be obtained from the *Journal* office. Adherence to the instructions will prevent delays both in acceptance and in publication.

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BRIEF SUMMARY

CONTRAINDICATIONS
There are no known contraindications to the use of sucralfate.

PRECAUTIONS
Duodenal ulcer is a chronic, recurrent disease. While short-term treatment with sucralfate can result in complete healing of the ulcer, a successful course of treatment with sucralfate should not be expected to alter the post-healing frequency or severity of duodenal ulceration.

Drug Interactions: Animal studies have shown that simultaneous administration of CARAFATE (sucralfate) with tetracycline, phenytoin, digoxin, or cimetidine will result in a statistically significant reduction in the bioavailability of these agents. The bioavailability of these agents may be restored simply by separating the administration of these agents from that of CARAFATE by two hours. This interaction appears to be nonsystemic in origin, presumably resulting from these agents being bound by CARAFATE in the gastrointestinal tract. The clinical significance of these animal studies is yet to be defined. However, because of the potential of CARAFATE to alter the absorption of some drugs from the gastrointestinal tract, the separate administration of CARAFATE from that of other agents should be considered when alterations in bioavailability are felt to be critical for concomitantly administered drugs.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Chronic oral toxicity studies of 24 months' duration were conducted in mice and rats at doses up to 1 gm/kg (12 times the human dose). There was no evidence of drug-related tumorigenicity. A reproduction study in rats at doses up to 38 times the human dose did not reveal any indication of fertility impairment. Mutagenicity studies were not conducted.

Pregnancy: Teratogenic effects. Pregnancy Category B. Teratogenicity studies have been performed in mice, rats, and rabbits at doses up to 50 times the human dose and have revealed no evidence of harm to the fetus due to sucralfate. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when sucralfate is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children have not been established.

ADVERSE REACTIONS
Adverse reactions to sucralfate in clinical trials were minor and only rarely led to discontinuation of the drug. In studies involving over 2,500 patients treated with sucralfate, adverse effects were reported in 121 (4.7%).

Constipation was the most frequent complaint (2.2%). Other adverse effects, reported in no more than one of every 350 patients, were diarrhea, nausea, gastric discomfort, indigestion, dry mouth, rash, pruritus, back pain, dizziness, sleepiness, and vertigo.

OVERDOSAGE
There is no experience in humans with overdosage. Acute oral toxicity studies in animals, however, using doses up to 12 gm/kg body weight, could not find a lethal dose. Risks associated with overdosage should, therefore, be minimal.

DOSAGE AND ADMINISTRATION
The recommended adult oral dosage for duodenal ulcer is 1 gm four times a day on an empty stomach.

Antacids may be prescribed as needed for relief of pain but should not be taken within one-half hour before or after sucralfate.

While healing with sucralfate may occur during the first week or two, treatment should be continued for 4 to 8 weeks unless healing has been demonstrated by x-ray or endoscopic examination.

HOW SUPPLIED
CARAFATE (sucralfate) 1-gm tablets are supplied in bottles of 100 (NDC 0088-1712-47) and in Unit Dose Identification Paks of 100 (NDC 0088-1712-49). Light pink scored oblong tablets are embossed with CARAFATE on one side and 1712 bracketed by C's on the other.

Issued 1/87

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4. Marks IN, Wright JP, Gilinsky NH, et al: *J Clin Gastroenterol* 8:419-423, 1986.
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Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

AMBULATORY CARE

New London—Immediate full or part-time position available to work in an established Ambulatory Care Center. Excellent salary and benefits. Send CV to Charles M. Parrot, M.D., Nameaug Walk-In Medical Center, 21 Montauk Ave., New London, CT 06320.

FAMILY PRACTICE/PRIMARY CARE

Wanted: Young M.D., who is interested in a family practice, to start Primary Care Facility with a small client base in East Hartford, Connecticut. Please call Mr. Philip Vaglica for further information. (203) 569-3640.

GENERAL PRACTICE

G.P./F.P./Internist for established center in southeastern Connecticut. Call Kathy Williams at (203) 443-4255.

INSTITUTIONAL AND INDUSTRIAL MEDICINE

Part-time physician needed for sexually transmitted clinics and international travel clinics at the New Haven Health Department. Call the Medical Director at 787-8184 or send resume to the New Haven Health Department, c/o Medical Director, One State St., New Haven, CT 06511.

JCAH accredited 103-bed hospital specializing in alcohol and substance abuse, seeking physician to provide diagnosis, care and treatment of patients in small, urban State Hospital. Completion of an approved residency program and a license to practice medicine and surgery in Connecticut is required. No routine "on call" duty. Salary commensurate with experience and training plus full state benefit package and bonus for Board Certification. Please contact Dr. Marilynn Stuart at 566-3058.

INTERNAL MEDICINE

Wanted: Ambitious BC/BE internist for expanding computerized solo practice. $50,000 guarantee with shared overhead. Benefits: malpractice (one year), four weeks vacation and four day work week. Beautiful shoreline location in Connecticut minutes from Yale. Serious replies only. Send CV with letter of interest in confidence to: Dr. Andrew Weinberg, 144 N. Main St., Branford, CT 06405.

Gastroenterology. Two man greater Hartford Gastroenterology practice seeking additional partner starting July 1988. Kindly reply with CV to G.I. Practice, 17 Adler Rd., Simsbury, CT 06070.

Internist/Geriatrics. Three person group, with two physicians nearing retirement, seek fourth BE/BC for busy practice in coastal Connecticut with large hospital, office and nursing home practice. Geriatric interest preferred. Send CV to Andrea Schaffner, M.D., 67 N. Main St., Essex, CT 06426.

INTERNAL MEDICINE/FAMILY PRACTICE

Small practice for sale. Excellent location; 25 miles from New Haven. Includes office equipment. Low rent. Write, CSMS, IM/CN.

MISCELLANEOUS

Internist/Family Practitioner/General Practitioner. Excellent opportunity in suburban Hartford area. New office space available. Send inquiries to CSMS, c/o MISC/CA.

OBSTETRICS & GYNECOLOGY

N.W. Connecticut B.C. solo OBS/GYN seeks associate to join well-established practice. Part time possible. Please send CV to CSMS, c/o OB/KD.

Excellent opportunity for a BC/BE, OB/GYN to join an established two-person practice in central Connecticut. The position would involve devoting half-time to private practice and half-time as Medical Director of hospital-sponsored OB program. OB program responsibilities include supervision and training of residents. Competitive salary and fringe benefits. Send CV to CSMS, c/o OB/GA.

OPHTHALMOLOGY

Connecticut Practice: Challenging established "complete-surgical" consultative private solo practice in Ivy-league setting of semi-retired well-known practitioner. Must be humanitarian, carry own malpractice insurance; Connecticut licensed: BC/BE. Please reply to: P.O. Box 1085, Orange, CT 06477-7085.

PEDIATRICS

Neonatologist. BC/BE. Full service Community Hospital in lower Fairfield county, Connecticut seeks a part-time Neonatologist to expand capabilities of Level I Nursery and work closely (including coverage) with a well-established Level II Nursery. Opening available immediately. If desired, opportunity with a combined part-time position in a general pediatrics practice is also available. Send CV to: Chairman, Neonatologist Search Committee, St. Jopseph Medical Center, 128 Strawberry Hill Ave., P.O. Box 1222, Stamford, CT 06904.

PRIMARY CARE

Internist. BC/BE, w/wo subspecialty to join ABIM Internist in expanding primary care practice in New Haven suburb. Yale affiliation. Competitive salary plus incentive leading to early partnership. Send CV to Dr. J.D. Gaines, 1122 Highland Ave., Cheshire, CT 06410.

PEDIATRICS

Coastal Connecticut—BC/BE Pediatrician to join busy two-person practice in beautiful shoreline community. University affiliated hospital nearby. Excellent salary, production bonus, early partnership. Available July. Send CV to CSMS, c/o PED/OE.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

ANESTHESIOLOGY

March '88. Age 36. Licensed in Connecticut. Presently in practice. Nat'l bds. AB elig. MD, Medical College of Wisconsin, Milwaukee, WI; Int. and Res., University of Michigan Medical Center, Ann Arbor, MI; Fellowship, Veterans' Hospital, University of Michigan Medical Center. Prefers a group type practice. Write, Mark P. Haubrich, M.D., 2500 East Bay Dr., #1-B, North Bend, OR 97459.

FAMILY PRACTICE

July '88. Age 40. Licensed in Connecticut. Nat'l bds. AB cert. MD, University of Bologna, Italy; Int. and Res., Glen Cove Community Hospital. Prefers solo, associate, or institutional type practice with no obstetrics if possible. Write, John E. DeLoria, M.D., VIA A. Caro 3B, 60019, Senigalli, Italy.

Dec. '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC-(Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

March '88. Age 74. Licensed in Connecticut. Nat'l bds. AB cert. MD, State University of New York; Int., Brooklyn Hospital, Brooklyn, NY; Res., Post-Graduate Hospital and Mt. Sinai Hospital, New York, NY (Surgery); Fellowship, Bowen-Brook Fellow in Surgery, NY Academy of Medicine. Has experience in malpractice claims review. Prefers group, associate, institutional or industrial type practice. Write, M. Judson Mackby, M.D., 82 Saunders Lane, Ridgefield, CT 06877.

GENERAL SURGERY

Aug. '88. Age 42. Presently in practice. FLEX. AB cert. MD, Damascus University, Syria; Int., Waterbury Hospital, Waterbury, CT; Res., Bronx-Lebanon Hospital, New York, NY. Prefers group, associate or institutional type practice in a medium to large-sized community. Write, Tareq Al-khatib, M.D., 315 12th St., Dyersville, Iowa 52040.

INTERNAL MEDICINE

July '88. Age 42. Licensed in Connecticut. FLEX. AB elig. MD, Ludwig Maximilians-Universitaet, West Germany; Int. and Res., Bridgeport Hospital, Bridgeport, CT. Prefers solo, group, associate or institutional type practice. Write, Rona Lieberman, M.D., 8 Garden St., Milford, CT 06460.

Immediate available. Age 41. Licensed in Connecticut. AB elig. MD, University of Rajasthan, S.P. Medical College, Bikaner, India; Int. and Res., Bronx Lebanon Hospital Center, Bronx, NY. Master of Surgery, University of Rajasthan, S.P. Medical College. Prefers group or associate type practice in a medium-sized community. Write, Sardul J. Singh, M.D., 103 Woodland Hills Rd., White Plains, NY 10603.

Sept. '88. Age 32. Presently in practice. Nat'l bds. AB cert. MD, University of Himachal, India; Int. and Res., Wayne State University, Detroit, MI. Prefers group or associate type practice. Write, CSMS, c/o HSM/IM.

PSYCHIATRY

Feb. '88. Age 47. Licensed in Connecticut. Presently in practice. Nat'l bds. AB elig. MD, Osmania Medical College Osmania University, Hyderabad, Andhra, India; Int., Osmania General Hospital, Hyderabad; Res., Gandhi Hospital, Secunderabad, India and Jewish Memorial Hospital, Manchester, England; Res., Gandhi Secunderabad and Queen's Park Hospital and St. Thomas' Hospital, England. Prefers part time positions including consultations in solo or institutional type practices. Write, Naimetulla A. Syed, M.D., Fairfield Hills Hospital, Newtown, CT 06470.

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Head Injury: Management in Children

CHARLES C. DUNCAN, M.D. AND LAURA R. MENT, M.D.

Introduction

THE most important aspect of the care of the head-injured child is appropriate observation. Although computerized axial tomography (CT scan), advanced intracranial pressure monitoring, and ventilator support have all significantly improved the care of the head-injured patient, the appropriate use of these tools depends directly upon the clinical observations made about the patient. Such observation begins at the time of injury and extends to hospital arrival and intensive care monitoring procedures. Indeed, while of most importance in the acute phases of injury the need for continuous evaluation of the head trauma patient continues until all manifestations of the injury have either resolved or left fixed deficits.[9,20]

Level of Consciousness

Level of consciousness is the most important parameter available for observation and must be assessed repeatedly in the victims of head trauma. The Glasgow Coma Scale (GCS) and the Neonatal Arousal Scale permit level of consciousness to be objectively determined with good interobserver reliability.[8] The scales are composed of eye opening, motor response, and verbal response, with modifications for the very young by scoring response to sound rather than to speech. The scores in both scales range between 3 and 15. Minor head injuries are judged to have scores between 15 and 13, moderate head injuries between 12 and 9, and severe head injuries between 8 and 3. It should also be remembered that assessment of level of consciousness, although foremost in the evaluation, does not at all replace or lessen the need for repetitive neurologic and general physical examinations by trained personnel.[1,2,7]

Triage

Triage of patients with central nervous system trauma should be based upon the availability of resources. The neurosurgeons in the Southeastern Emergency Medical Services (EMS) Region of Connecticut agreed upon a triage program in 1984. This program assesses level of consciousness, evidence of focal neurologic deficit, spinal cord injury, age, and availability of resources. Head injuries are categorized as minor, moderate, and severe as previously defined.

Patients with severe head injury, focal neurologic deficit, penetrating head injury, evidence of severe or moderate head injury and multiple trauma, spinal cord injury, and age less than 13 years should be triaged directly to the nearest Level 3 Trauma Center which in this region is Yale-New Haven Hospital.

Patients with moderate head injury, risk of spinal injury, and basilar skull fractures should be triaged directly to either a Level 2 or Level 3 Trauma Center (St. Raphael Hospital or Yale-New Haven Hospital) in the New Haven area.

Minor head injuries should be evacuated to the closest emergency facility.

In order to support these goals, unified approaches to care and education were considered necessary, approaches that the neurosurgeons in this region agreed to provide. Further, endotracheal intubation and the use of inflatable pressure or MAST suits by properly trained EMS personnel was encouraged.

This represents a change in the custom of moving such an accident victim to the closest hospital. In addition, less severe head injuries may deteriorate and focal injuries may not be obvious to initial observers. Nonetheless, the rationale of this approach is to provide as rapid an access to definitive management as possible. For children, there is also a definite need for pediatric intensive care. The needs of other regions may differ but the basic concepts of such a triage should be consistent.

Diagnostic Imaging

Skull films have been demonstrated to correlate poorly with the presence or absence of intracranial pathology. In several large studies, less than 10% of patients undergoing skull films were found to have fractures. In addition most patients with fractures were not found to have posttraumatic intracranial lesions and many with serious intracranial pathology did not have evidence for fracture. This has led to a general agreement that head injury management should not ordinarily be based upon the presence or absence of fracture. Therefore, in an effort to maximize the information available and to avoid unnecessary studies, the guidelines for CT scan with bone windows as shown in Table 1 have been adopted at this and other institutions.[1,6,10,11] It should be noted, however, that a fracture crossing the middle meningeal groove may not be seen; widely separated fractures may not be appreciated; and minor depressed fractures may be missed.[5,6,10,13,21,22]

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Any patient who has struck his head with sufficient force should be considered to have had an injury which potentially has resulted in cervical fracture. Thus, the neck should be immobilized until assessment may be carried out. In the alert patient this may require no more than an inquiry into symptoms and physical examination. With altered level of consciousness or signs and symptoms, plane films will ordinarily be required for screening and CT scan may be necessary to resolve diagnostic problems.[9]

Table 1
CT INDICATIONS IN PEDIATRIC HEAD INJURY

1. Depressed level of consciousness at the time of arrival in the emergency room.
2. Focal neurologic signs.
3. Penetrating injury or otherwise detectable depression of skull.
4. History of progressive headache.
5. Unreliable history of injury.
6. Special consideration should be given to children less than two years of age.
7. Signs of basilar skull fracture including hemotympanum, nasal CSF, racoon eyes, Battle's sign.
8. Serious multiple trauma with evidence of head injury.

Of note, one definite indication for skull films is suspected child abuse.

Initial Care

Initial management of the head-trauma patients follows the basic guideline of elementary first aid. The use of MAST suits and endotracheal intubation by emergency medical services should be encouraged. The airway must be maintained, with additional care given to the potential for cervical instability and the high likelihood of aspiration, in the patient with altered level of consciousness. Although, hypovolemic shock is widely believed not to be the result of head injury, the very young are the dramatic exception to this rule; an infant may become profoundly hypotensive as a result of intracranial or even subgaleal hemorrhage.[7,17,18]

The usual signs of injury to the spine, chest, abdomen, or extremities, such as guarding or splinting, are not present in the unconscious patient and are not necessarily reliable in the child with an altered level of consciousness. As a consequence, suspicion of injury must be entertained in most such patients. Abdominal CT scans and survey films should be considered in these settings.[16,18,21]

Basilar skull fractures and maxillofacial injuries require special considerations. With disruption of the skull base, nasogastric tubes may enter the brain if not placed with direct visualization of the oral pharynx. Positive pressure mask ventilation in the presence of CSF leak or basilar fracture may lead to contamination of the basilar cisterns and subsequent bacterial meningitis.[5,6,10]

Medical Care

Initial care may blend very rapidly into definitive operative or nonoperative management depending upon the nature of the injury. The timeliness of such intervention will in many instances provide the difference between recovery and death. Such urgency may occur upon arrival at the hospital or later as the patient is undergoing observation.

Medical and surgical management of head injury are neither separate nor sequential activities in the care of head-injured patients. They must be conjoined, or the patient is likely to lose the benefits of both. Appropriately organized observation of level of consciousness, neurologic examinations, vital signs, CT scans, and laboratory values represent information upon which management decisions must be based. Such aspects as the use of anticonvulsants, steroids, sedation, muscle relaxants, mechanical ventilation, diuretics, fluids, antibiotics, and agents for cerebral protection depend upon the critical and experienced evaluation of these patient data.

Patients in coma for longer than six hours have an incidence of seizure approaching 50%. The routine use of anticonvulsants in these and less severe head injuries remains controversial. If anticonvulsants are used, they are not expected to be effective unless initial loading is carried out with the continuation of an appropriate maintenance dosage. Phenobarbital is likely to confuse the assessment of level of consciousness; therefore, phenytoin is the usual drug of choice.[16,18,19,22]

With basilar skull fractures and/or CSF leak, prophylactic administration of antibiotics is similarly controversial.[6,7,18] Studies do not show a decrease in the incidence of meningitis with their administration; indeed, patients with basilar skull fractures who have received prophylactic antibiotics and subsequently develop bacterial meningitis are more likely to be infected with resistant organisms. Regardless of the decision made about antibiotics initially, nose and throat cultures are advisable in the patient with evidence of a CSF leak.

Steroids have not been shown to be of clear benefit in head injury. Multiple trials have either suggested benefit or lack of it without providing a clear answer. Stress, including stress-induced gastrointestinal bleeding, is a significant problem regardless of the decisions about steroids, and antacids and/or histamine H_2 receptor antagonists should be administered to patients with moderate to severe head injuries.[18]

Essentially all patients with an altered level of consciousness have an excessive output of antidiuretic hormone (ADH) and need fluid restriction for a period of time. Measurement of electrolytes and osmolalities are essential for critical management of these parameters. As a response to trauma, free water excretion is reduced; thus, sodium and osmolality fall unless intake is restricted. Hyponatremia to 120mEq/L in the head injured patient leads to a diminished level of consciousness, further rises in intracranial pressure, and lower seizure threshold. Further reductions may lead to coma and status epilepticus. In addition to fluid restriction, correction of catabolic states with adequate nutrition will decrease intrinsic free water production.[5,7,21]

Intracranial Pressure

Intracranial pressure (ICP) after severe head injury follows an abnormal pattern in most instances with an elevated baseline, brief rises to levels interfering with cerebral perfusion, and more prolonged elevations of intracranial pressure which may also interfere with cerebral perfusion. The last are termed "plateau waves." Plateau waves may last ten to 60 minutes and are associated with intracranial pressures of 20 to 80 torr. Patients usually deteriorate clinically toward the end of such plateau waves. Level of consciousness may decline, pupils may dilate, abnormal eye movements occur, and there may be motor patterns such as abnormal flexion or decerebration. For this reason, in many centers patients with post traumatic coma (i.e., a Glasgow Coma Scale of eight or less) undergo invasive intracranial pressure monitoring.[1,2,3] Several methods are possible for such pressure measurement, including ventriculostomy, tissue pressure measuring devices, and a variety of devices for measuring pressure at the surface of the cerebral hemisphere. As with all other invasive monitoring approaches, there are significant risks associated with each of these techniques and care must be taken to assure reliable measurement. In addition, whether techniques that do not directly measure ventricular pressure are reliable at elevated pressures above 20 torr has remained a question.

The two major risks of intracranial pressure monitoring in general are intracranial hemorrhage and infection. Although, elevated ICP tends to tamponade most vessels which may bleed with such procedures, there may be an increased risk of hemorrhage if mannitol has been recently given. In addition, risk of infection appears to increase after five to seven days of monitoring. Prophylactic antibiotics are routinely given during such monitoring and, in the case of ventriculostomy, ventricular fluid is sampled daily for cells, protein, and sugar, and cultures are obtained.

Once a decision is made for intracranial pressure monitoring, the ICP at which treatment will be required must be decided. For this there are two basic approaches. The first is to set arbitrarily a pressure above which treatment modalities will be instituted. In many centers this is 20 torr in toddlers and older children and somewhat lower in the very young (i.e., 10 torr). The other approach requires calculation of the cerebral perfusion pressure (CPP) which is defined as the difference between the mean arterial blood pressure (MABP) and the mean ICP, that is, CPP = MABP-MICP. A CPP of 60 to 70 torr is thought to be adequate to maintain cerebral perfusion. Infants whose MABP is normally in the range of 40 to 50 torr, will obviously have a much lower CPP. Hence, understanding of normal ranges by age is critical.

Despite the maintenance of adequate CPP, an ICP above 25 torr appears to be deleterious. Thus a combined assessment of CPP and absolute ICP are most often used and no clear numbers are available to guide care. Trends of ICP are critically important, and, if rising, may indicate such new events as intracranial bleeding.

The extent to which rises in ICP should be treated is a matter both of pressure and time. Brief elevations may quickly resolve spontaneously but more prolonged elevations or an elevated baseline may require both considerable intervention and search for its cause.

Control of ICP is based upon the linear relationship between cerebral blood flow (CBF) and pCO_2, rises in intracranial pressure related to skeletal muscle activity, and increased free water in cerebral edema. A number of agents have been proposed which provide protection of the brain by decreasing cerebral metabolic rate; the most frequently used is barbiturate.

The means for treatment of elevated ICP include additional monitoring and patient control, including an arterial line for constant blood pressure measurement and periodic arterial blood gases, intubation and controlled ventilation, bladder drainage with the frequent need for diuretics, and central venous pressure measurement, or in some circumstances, pulmonary artery wedge pressures.

Increased ICP may in most circumstances be controlled by the following therapeutic measures:

1. Sedation and muscle relaxants.

2. Controlled mechanical ventilation to lower the pCO_2. Values in the low 20's appear to be well tolerated but numbers in the 'teens likely produce ischemia.

3. Osmotic diuretics, such as mannitol, and renal diuretics such as furosemide, either alone or in combination, often reduce ICP for as much as two to six hours by producing fluid shifts out of brain and dumping free water. Caution needs to be exercised with fluid restriction when such diuretics are given. While fluid intake is generally restricted to two thirds of maintenance, patients receiving diuretics may need considerably more as indicated by output, venous pressure, electrolytes, and osmolalities.

4. The effectiveness of barbiturates continues to be controversial. If used, pentobarbital sodium at a loading dose of 5 mgm/kgm and a continuous infusion of 1 to 4 mgm/kgm/h will maintain a blood level of 30 to 50 ug/dL. This agent is more rapidly cleared than phenobarbital sodium and the level may be more easily controlled. If more than one type of barbiturate is given measurement of levels becomes confused.

5. Decompressive craniotomy is widely used in some centers as an early measure. In the absence of a mass lesion, when ICP is aggressively treated medically and such measures fail, our experience indicates limited if any advantage of such operation.

Withdrawal of such support once elevated ICP resolves should be stepwise with gradual reduction. When diuretics have not been required for 24 hour or more, for example, then allowing the pCO_2 to rise gradually appears to be effective. If ICP again rises as the support abates, then it is reinstituted for at least another 24 hours.

Mass Lesions

Patients with significant mass lesions ordinarily require surgical operation. Aggressive control of ICP is not likely to be of benefit in the face of a shift and the extra volume that hemorrhage may represent. The timeliness of surgery cannot be over emphasized. Intracerebral hematomas are the most frequent mass lesions, followed by subdural hematomas, and then by epidural hematomas. The presence of any mass lesion is not in itself an indication for operation. The basic concept of the patient's level of consciousness and the results of neurologic examination are the determining factors. Unfortunately, once an operation has been performed, this does not assure protection from further problems and repetitive evaluation must continue.

Subdural hematomas in the very young present a special opportunity for rapid early treatment with subdural taps. Even acute subdural hematomas in this age group are likely to be liquid and show lower attenuation by CT than blood because of mixing with CSF. Short, beveled subdural tap needles with trochars following appropriate preparation and shaving may be inserted through the coronal suture 2 to 4 cm lateral to the midline with immediate removal of the mass and reduction in ICP. Both sides should be tapped in order to avoid brain shifts as most such subdural hematomas are bilateral. Caution must be exercised in that the too rapid removal of the subdural fluid may result in excessive brain shift. Hence extreme caution should be used in removing more than 10 to 15 cc. Taps ordinarily need to be carried out repetitively over a number of days. Subdural tap peritoneal shunts may be required temporarily if an initial series of taps does not resolve the process.

Outcome Following Head Injury

The consequences of head injury are wide ranging, from an immediately lethal injury to headache and a temporary decline in performance. However, dismissing even transient traumatic loss of consciousness as inconsequential is incorrect. Essentially everyone with a minor head injury has sequelae. Seizure threshold is likely to have been lowered, headaches may persist for weeks to months, olfaction is frequently disturbed, and intellectual function is likely to be altered for a significant period of time. Similarly, moderate head injury will produce similar but frequently more prominent signs and symptoms. The pilot study of the Traumatic Coma Data Bank, which included both children and adults, found that half of those sustaining a severe head injury survived and only half of these survivors recovered to a neurodevelopmental testable range. These findings indicate the need for counseling of the patient and his family early in the course of an injury and the need for organized follow up care.[4,12,14,15]

Return to contact sports following head injury requires judicious decisions. As an increasing number of individuals have been developmentally tested following sports-related head injuries, there appears to be a large proportion who have a significant decline in their scores following injury. This seems to argue that return to such activities should at least await demonstration of return to usual school function, with the consideration for formal testing if problems occur.[14,15]

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Staging Workup of Breast Carcinoma in the Community Hospital

JOHN HAYES, M.D. AND EDWARD DUNN, M.D.

ABSTRACT—A retrospective review of 49 cases of breast cancer patients treated by the same senior surgeon is reported. All patients had had a metastatic workup consisting of history and physical examination, liver function tests, brain scan or head computed tomographic (CT) scan, liver and spleen scan, and bone scan. Forty percent of patients had stage I disease, 31% stage II, 21% stage III, and 8% stage IV. Only one patient had bone pain and none were reported to have neurologic changes on initial physical examination. Four percent had abnormal liver function tests (LFTs). No abnormal head CT or brain scan results were obtained. Only one patient had an abnormal liver/spleen scan. Thirty-one percent of patients with stage III disease had a positive bone scan, while only 5% of those with stage I disease and 6% of those with stage II disease had an abnormal bone scan. A review of the literature on the staging workup of breast cancer patients is presented. Our results support the following conclusions: There is no role for head CT or liver and spleen scan in the metastatic workup of any breast lesion. The routine determination of alkaline phosphatase level is supported by the literature. There is no role for a bone scan in stage I and II disease. Bone scans do have some correlation in stage III disease and may serve as markers for subsequent follow up postadjuvant therapy. The cost of such an extensive workup is over $1,000. An alkaline phosphatase level costs less than $10 and, thus, should be determined first in the initial workup of the asymptomatic breast cancer patient. An elevated level should then be a guide in obtaining further imaging studies.

Introduction

THE eventual survival of patients with breast carcinoma depends upon the clinical stage of their disease at time of initial presentation. This clinical staging is based on the tumor/node/metastases (TNM) classification devised by the American Joint Committee for Cancer Staging and End Results Reporting. Patients with stage I disease have an 80% chance of ten year survival. Those with stage II disease have a 60% chance. The chance of ten year survival is slightly less than 30% in patients with stage III disease.[1] The presence of systemic metastases constitutes stage IV disease, and there is only minimal chance of long term survival. Only 20% of patients with stage I breast cancer have occult metastases, whereas more than 70% with stage III have occult metastases.[1] The common sites of distant metastases, according to Cutler,[2] are bone, lung, pleura, and lymph nodes other than ipsilateral axillary nodes. Initial involvement of liver and brain is less frequent. The indications for various imaging techniques, including head CT, liver scan, bone scan, and laboratory tests, in addition to the clinical history and physical examination, to detect the presence or absence of metastatic disease in patients with breast carcinoma is still controversial. This study was undertaken to determine the role of these various studies in the staging work up of patients with breast carcinoma in the community hospital.

Materials and Methods

The medical records of 49 consecutive patients with breast cancer treated by the same senior surgeon at the Waterbury Hospital Health Center were reviewed. All patients were female and all had modified radical mastectomy for known or suspected breast cancer. The majority of patients underwent a metastatic workup preoperatively or postoperatively which included a physical examination, liver function tests (SGOT, LDH, alkaline phosphatase, and bilirubin), carcinoembryonic antigin (CEA) level, brain scan or head CT scan, liver/spleen scan, and bone scan. The results of these various scans are reported as they were reported on the medical records by the radiologists performing the study.

All patients were staged according to the TNM system used by the tumor registry of the Waterbury Hospital Health Center. This staging is based on clinical and pathologic information. T_1 represents tumors of 2 cm or less in greatest dimension without skin involvement. T_2 represents tumor over 2 cm or with skin attachment or nipple retraction. No pectoral muscle or chest wall attachment is present. T_3 represents tumor of any size with any of the following: skin infiltration, ulceration, peau

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d'orange, skin edema, pectoral muscle or chest wall attachment. N_0 is no microscopic evidence of carcinoma in axillary nodes. N_1 is axillary lymph node(s) with microscopic evidence of carcinoma but clinically freely movable on palpation. N_2 is microscopic evidence of carcinoma in homolateral axillary, intraclavicular, or internal mammary lymph nodes. Nodes are clinically fixed to one another or other structures. M_0 represents no distant metastases; M_1 represents clinical and/or radiographic evidence of metastases except those to homolateral axillary, intraclavicular, or internal mammary nodes. The staging system is presented in Table 1.

Table 1
STAGING OF BREAST CANCER

Stage I	$T_1N_0M_0$: or $T_2N_0M_0$
Stage II	$T_1N_1M_0$: or $T_2N_1M_0$ includes all N_1, M_0 except for T_3
Stage III	$T_3N_0M_0$: or $T_3N_1M_0$ or T_1, N_2, M_0 including any combination of either T_2 or N_2 with M_0
Stage IV	Any clinical stage of disease with distant metastasis

Results

Forty percent of patients had stage I disease, 31%, stage II, 21%, stage III, and 8%, stage IV. Seventy-one percent of patients had a palpable breast mass; 20% had associated skin changes. Only one patient had bone pain, and none were reported to have neurologic changes on initial history and physical examination. Four percent had abnormal LFTs and 25% had an elevated CEA level. Eighty-six percent of patients had head CT or brain scan and no abnormal results were obtained. Eighty-eight percent of patients had liver/spleen scan and only one questionable abnormality was obtained (this patient had normal LFTs and was considered to have stage II disease).

Ninety-six percent of patients had a bone scan performed (Table 2). Seventeen percent of these scans were considered abnormal. In 50% of these cases, the patient had a T_3 lesion. In the other 50%, one-half of the scans were shown to be negative by plain radiographs of the area in question. One patient had a bone infarct and the other had evidence of degenerative joint disease. The former patient had a T_1 lesion and the latter a T_2 lesion. The other two cases (T_1 and T_2) were considered inconclusive of metastatic disease. Thus, 31% of patients with T_3 lesions had abnormal bone scans. Only 5% of T_1 lesions and 6% of T_2 lesions had a questionable bone scan. In terms of clinical staging, the same results applied: 31% of patients with stage III disease had a positive bone scan, while 5% of those with stage I and 6% of those with stage II had a questionable bone scan (Table 3).

Table 2
OVERALL RESULTS: NUMBER OF PATIENTS WHO HAD EACH STUDY

STAGE	*# of Patients*	*LFTs*	*Brain Scan Head CT*	*Liver scan*	*Bone scan*
I	19	19	17	17	18
II	15	15	14	14	15
III	10	10	8	8	9
IV	4	4	3	3	4
?	1	1	0	1	1

Table 3
RESULTS BY STAGE

STAGE	*LFTs*		*Brain scan/ head CT*		*Liver scan*		*Bone scan*	
	Abnormal	*Normal*	*Abnormal*	*Normal*	*Abnormal*	*Normal*	*Abnormal*	*Normal*
I	1	18	0	17	0	17	2	16
II	1	14	0	14	1	13	2	13
III	1	13	0	11	0	11	4	9
?	1	0	0	0	0	1	0	1

Discussion

The place of laboratory screening tests and the imaging modalities reviewed in this study in the initial staging work up of patients with breast cancer will be discussed below.

Routine Laboratory Screening Tests

Among routine laboratory screening tests for the presence of metastatic disease, the determination of the serum alkaline phosphatase level seems to correlate most highly. In 1972, Castagna[3] concluded that "the serum alkaline phosphatase value was the most reliable serologic test in predicting liver metastasis," based on a study of 109 consecutive patients with extraheptic primary carcinomas. Feig[4] found that an abnormal alkaline phosphatase in a breast cancer patient signals hepatic involvement with 85% certainty. Baker[1] also advocated the routine determination of serum alkaline phosphatase.

Though the present study did not find a high correlation of the alkaline phosphatase level with the presence of metastasis, it does seem cost effective to determine this level routinely. In only 8% of patients in this study was the alkaline phosphatase level elevated. In all of these cases, liver scans failed to confirm the presence of hepatic metastasis. The determination of the serum alkaline phosphatase level costs the hospital less than $10, while a liver scan costs $257. It is more cost effective, particularly in light of studies from the literature, to determine the alkaline phosphatase level routinely instead of obtaining a liver scan in every case. If the alkaline phosphatase is elevated, a liver scan should be obtained.

Brain Scan/Head CT

There is sparse literature on the role of cerebral computerized tomography in the staging evaluation of cancer patients. Intracerebral metastasis have been reported in 9% to 26% of patients with breast carcinoma. Lewi et al[5] studied 61 patients with breast cancer (40 were stage I or II), who underwent head CT. In those patients who were asymptomatic, only two had abnormal scans, both of whom had systemic metastasis elsewhere. This group (Lewi et al) concluded that "there is no place for routine cerebral computer assisted tomography for patients with early carcinoma of the breast." The present study strongly supports these conclusions. No abnormal results were reported in the 85% of patients who underwent head CT scan or brain scan. The only role for head CT is in the symptomatic patients, ie, one who has unexplained neurologic findings or symptoms on initial physical examination and history.

Liver Scan

The role of serum alkaline phosphatase determination in the screening workup of breast cancer patients has been discussed. The limitations of the liver scan have been shown by Ackerman.[6] Single parenclymal defects smaller than 2 cm in size cannot be routinely detected by liver scintigraphy. Sugarbaker et al[7] examined the joint application of CEA level and liver scan to increase the accuracy of assessment of hepatic metastasis. This group reviewed 55 patients with suspected metastatic breast cancer. They concluded that the joint application of the liver scan and CEA assay afforded a highly accurate gauge of liver status in this selected group of patients. Sears et al[8] reviewed the results of 100 liver scans obtained in the initial evaluation of patients with carcinoma of the breast. Only five scans were considered questionable; the other 95 were reported as normal. Of these five scans, only one patient subsequently was described as having definite hepatic metastasis. This group concluded that a liver scan should not be considered a worthwhile screening procedure.

The present study supports these conclusions of Sears et al. Only one questionable liver scan was found in the 88% of patients who underwent this procedure. This patient had a T_1 lesion (stage II), normal LFTs, and a CEA level of 3.8ng per dl. The results of this liver scan were considered inconclusive of metastatic disease. Head CT and bone scan were both normal in this patient. CEA levels determined in this study also did not correlate with the presence or absence of metastatic disease. In all patients with stage IV disease, CEA levels were determined. In only one patient was the level elevated. CEA levels were elevated in 16% of patients with stage I disease, 27% of those with stage II disease, and 30% of those with stage III disease. These data does not support the routine use of CEA level determination as a screening marker. As noted earlier, a liver scan is only indicated if the alkaline phosphatase level on routine screening is elevated.

Bone Scan

As noted in the introduction to this paper, the skeletal system is the most common site for eventual metastasis from breast carcinomas. As was shown by Citrin et al[9] the bone scan is more sensitive than plain radiographs in detecting bony metastasis. Therefore, the bone scan is considered to be the initial screening procedure of choice for the early detection of bony metastasis. The use of the bone scan in the initial evaluation of patients with early breast carcinomas is, however, controversial.

Throughout the literature there is a wide variation in terms of the yield of positive scans in patients with stage I or II breast cancer. The experience in the series presented here yielded 5% questionable bone scans in stage I patients and 6% questionable bone scans in stage II patients. In contrast, in the patients with stage III disease, 31% had an abnormal bone scan considered positive for metastasis. A low incidence of positive bone scan in early carcinomas is reported by numerous authors.[10-13] The incidence of positive scans presented in these series was approximately 2%-7%. Other groups[14,15] have reported higher incidences of positive results in stage I and II patients (Table 4).

Table 4
INCIDENCE OF POSITIVE BONE SCANS IN PATIENTS WITH BREAST CANCER

Author	*No. of Patients*	*Stage*	*Positive Scans*
Gerber, 1977 [10]	110	I & II	2%
Baker, 1977 [11]	105	I & II	1.5%
		III	24%
Clark, 1978 [12]	201	I	7%
		II	4%
		III	39%
El-Domeiri, 1976 [13]	55	I	0%
		II	8%
		III	40%
Campbell, 1976 [14]	80	I	18%
		II	41%
Hoffman, 1972 [15]	60	I	20%
		II	38%
		III	60%
Hayes, 1987	49	I	5%
		II	6%
		III	31%

The results of this study and those of multiple other investigators, except as noted above, do not support the routine use of bone scanning as a screening procedure for patients with early breast cancer. This opinion is shared by Clark,[12] Baker,[1] and Feig.[4] It is not reasonable to perform a test which will yield at best 8% positive results, particularly in light of a cost of $329 per scan.

This opinion is not shared by all authors. Gerber et al,[10] whose group reported only a 2% yield of positive bone scans in stage I and II patients, argue that the bone scan should be obtained as a baseline for subsequent follow-up. The argument here is that periodic scans would detect metastasis earlier, which would allow earlier treatment and thus increase survival. Present evidence does not support this viewpoint. As pointed out by Lee,[16] quoting Khandeker,[17] "it remains to be shown that breast cancer patients followed by aggressive periodic testing survive significantly longer than patients followed conventionally by medical history, physical examination, and appropriate biochemical studies." From a practical point of view, the only change in treatment related to the results of bone scan is the prevention of impending pathologic fracture. Obviously, these patients will have bone pain and in almost all cases stage III or IV disease.

In regards to stage III disease, there is no argument that bone scanning should be performed as an initial screening test. In the present study, a 31% positive yield was obtained. Similar results have been reported by most other authors (Table 4).

The most logical approach to screening bone scan is that put forth by Feig[4] and Philipshen.[18] Both authors concluded that a bone scan should be obtained if the alkaline phosphatase level is elevated or if the tumor is T_2 or T_3. In the present study, a positive bone scan was associated with an increased alkaline phosphatase level only 25% of the time. But, as discussed under liver scans, the determination of a routine alkaline phosphatase level in patients with early breast cancers is much more cost effective than routine ordering of bone scans.

Conclusions

1. There is no role for head CT, brain scan, or liver/spleen scan in the staging workup of any breast lesion, unless symptoms or findings indicate the need.

2. The CEA level does not correlate consistently with metastatic disease.

3. The value of routine determination of alkaline phosphatase is supported by the literature, but not necessarily by this study.

4. There is no role for bone scan in stage I or II disease. Bone scans do have some correlation in stage III disease and may serve as markers for subsequent follow-up postadjuvant therapy.

5. The cost of such an extensive screening metastatic workup as presented in this study is as follows: A head CT for evaluation of metastatic disease costs the hospital $548. As noted, the liver scan costs $257, and bone scan, $329. The total cost of these three studies is $1,134. The determination of the alkaline phosphatase level has cost the hospital less than $10. An alkaline phosphatase level should thus be determined first in the initial workup of the asymptomatic patient. An elevated alkaline phosphatase should then guide one in obtaining the additional imaging studies.

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EPITOMES OF PROGRESS

Important Advances in Clinical Medicine

Nuclear Medicine

The Scientific Board of the California Medical Association presents the following inventory of items of progress in nuclear medicine. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in nuclear medicine that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Nuclear Medicine of the California Medical Association and the summaries were prepared under its direction.

Metaiodobenzylguanidine in the Diagnosis of Pheochromocytoma and Neuroblastoma

METAIODOBENZYLGUANIDINE (MBIG), a guanethidine derivative resembling norepinephrine in structure, was originally described by investigators at the University of Michigan; it can be labeled with iodine 123 or iodine 131. After administration, MIBG is bound to norepinephrine binding sites and subsequently stored in the neurosecretory granules of neuroectodermal cells located in the adrenal medulla, pheochromocytoma, neuroblastoma, and some other tumors of neural crest origin.

Only 25% of pheochromocytomas are diagnosed before death. The morbidity and mortality in patients with these lesions is high because of stroke, myocardial infarction, and the complications of hypertension. In unrecognized pheochromocytoma, catecholamine crisis and death can occur during the induction of anesthesia for an unrelated problem. Since 10% to 20% of pheochromocytomas are extra-adrenal or multifocal, MIBG imaging is establishing its place in the characterization of adrenal or periadrenal masses incidentally encountered in computed tomographic scans.

Imaging is usually done 24 hours after giving the patient MIBG. Images can be obtained up to 48 hours after administration with iodine 123 and even later with iodine 131. Lesion image contrast tends to improve with time, and faint normal adrenal medullary localization rarely is a problem because tumors typically show abundant uptake. Hepatic, bladder, and occasionally colonic localization normally is seen early—3 to 24 hours. Myocardial localization appears to be quantitatively related to catecholamine binding site concentration.

Reported sensitivities of MIBG imaging for the diagnosis of pheochromocytoma range between 70% and 90%. Specificities of 100% have been encountered in large series reported at both the University of Michigan and the University of California, San Francisco. Metaiodobenzylguanidine also has been useful in staging neuroblastomas and in preoperative categorizing of abdominal masses in children.

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Gallium Studies in Patients With the Acquired Immunodeficiency Syndrome (AIDS) and the AIDS-Related Complex

GALLIUM GA 67 citrate imaging has been a useful tool in evaluating patients with the acquired immunodeficiency syndrome (AIDS) or the AIDS-related complex (ARC). In identifying *Pneumocystis*

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carinii pneumonia, the noninvasive gallium scan, because its sensitivity is greater than 90%, is an excellent screening tool for the early detection of asymptomatic opportunistic infection with or without radiographic abnormality and as a triage device to direct the appropriate patients to bronchoscopy and bronchoalvelor lavage when tissue-specific diagnosis is needed.For example, in a group of about 30 patients studied by Kramer and colleagues, the relative sensitivity of a chest x-ray film, when compared with the gallium scan, was only 50%. Gallium scans are thus useful in identifying clinically occult *P carinii* pneumonia or may lead to a reclassification from ARC to AIDS in those patients who are asymptomatic and have a normal chest x-ray film. The pattern of gallium localization in the lungs in these patients is mainly diffuse, with intense increased uptake in both lungs, although focal localization has been noted in some patients. The focal pulmonary pattern has also been seen in patients with *Mycobacterium avium-intracellulare* and bacterial pneumonia. Other than *P carinii* pneumonia, the diffuse pattern is also seen in pulmonary infections caused by cytomegalovirus, *Crytococcus, Toxoplasma,* and in interstitial fibrosis. Sputum retrieval, bronchial washings, or open lung biopsy must be done for a definitive diagnosis.

M avium-intracellulare is a common infection in AIDS patients. Intrathoracic regional lymph node localization of gallium 67 should suggest *M avium-intracellulare* lymphadenitis; the finding has a 90% positive predictive value. Lymphoma may present with a similar pattern, however, making tissue diagnosis imperative.

The intestine is one of the most common organs for opportunistic infections in patients with AIDS. Intense gallium colonic uptake, especially with good bowel preparation, may suggest infection of the intestinal tract or inflammation of the intestinal mucosa. Further investigations, such as stool examination, microbiologic studies, and, if appropriate, colonoscopy with biopsy, should be done.

About 95% of the neoplasms occurring in AIDS patients are either Kaposi's sarcoma or non-Hodgkin's malignant lymphoma. Kaposi's sarcoma is common in AIDS patients and accounts for approximately 85% of cancer in male homosexuals. To date, no evidence of gallium uptake in the lesions of Kaposi's sarcoma has been reported. The gallium scan is helpful in differentiating pulmonary Kaposi's sarcoma from infection in AIDS patients with this cancer. In such patients, a normal gallium scan with an abnormal chest x-ray film increases the likelihood of pulmonary Kaposi's sarcoma.

About 4% to 10% of AIDS patients have non-Hodgkin's lymphoma. High-grade lymphomas usually have intense gallium uptake, while lower grade lymphomas usually have mild gallium uptake. The degree of uptake in the initial gallium scan appears to be inversely related to the survival times of these patients. Patients with non-Hodgkin's lymphoma frequently have extranodal involvement; gallium scanning may be superior to computed tomography scanning for staging purposes.

In conclusion, gallium scanning is clinically very useful in patients with AIDS. Because its sensitivity is greater than 90%, it can differentiate ARC from asymptomatic AIDS in the early stage of *P carinii* pneumonia. When used in patients with minimal pulmonary symptoms, gallium scans can noninvasively identify those who have infection and would benefit from bronchoscopy or lung biopsy.

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Radionuclide Evaluation of Renal Transplants

RENAL scintigraphy has proved useful in assessing the complications of renal transplantation. Flow, morphology, and function can be evaluated without substantial risk. Complications can be divided into two categories: renal parenchymal pathology, including acute tubular necrosis (ATN) rejection, and cyclosporine nephrotoxicity; and anatomic lesions, including vascular obstruction, perinephric fluid collections, urine leak, and obstruction. The clinical findings in many of these processes are nonspecific and, in the case of rejection, may be obscured by routine immunosuppressive therapy.

The two most important radioactive nuclides in transplant imaging are technetium Tc 99m pentetic acid (CTPA) and iodohippurate sodium I 131 (Hippuran I 131). Although many abnormalities can be detected with either agent, they are in some respects complementary, and often both are used. ^{99m}Tc DTPA has better imaging properties and gives much better statistics in the usual doses, whereas iodohippurate^{131}I is principally secreted by the tubules and is helpful when certain parenchymal lesions may be present ("polyuric" ATN or cyclosporine toxicity) with relatively normal renal flow. Both studies can be readily quantified in a variety of ways using time-activity curves and, on occasion, by sampling the plasma and urine activity. A baseline renal scan is usually done within 24 hours of transplant placement, with follow-up studies as clinically dictated.

Among the parenchymal lesions, acute tubular necrosis is characterized by relatively normal flow on the DTPA study, with very poor excretion of iodohippurate ^{131}I and poor accumulation of DTPA in the urine. As ATN resolves, the iodohippurate^{131}I program assumes a more normal configuration. In transplant rejection, the renal perfusion is substantially diminished and renal tubular function is abnormal. A prominent collecting system ("pseudo-obstruction") may be seen in cases of rejection as well. Cyclosporine toxicity has a similar scintigraphic appearance to ATN, with diminished tubular function out of proportion to the change in renal perfusion. Many other agents have been proposed to detect rejection, including technetium Tc 99m sulfur colloid, gallium Ga 67 citrate, fibrinogen I 131, and leukocytes and platelets labeled with indium In 111. Most of these agents have proved too nonspecific to be useful, but the use of platelets labeled with ^{111}In appears promising.

Anatomic lesions are as a group best shown with ^{99m}Tc DTPA flow studies and sequential static images. Renal vascular occlusion is seen as a complete absence of renal perfusion to the kidney or the segment of kidney involved. Renal artery stenosis does not have a specific scintigraphic appearance, but the scan does show decreased perfusion in the absence of rejection by other criteria. Hematomas and lymphoceles are seen in scintigraphic studies as photopenic defects or possibly a "halo" near the transplant. Urinomas appear initially photopenic but gradually fill in with activity as tracer is excreted into the collecting system. To show the filling of a urinoma, it may be necessary to obtain postvoiding images. Occasionally obstruction of a transplanted kidney is seen that is scintigraphically similar to an obstructed collecting system in a nontransplanted kidney.

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Detection of Gastrointestinal Bleeding

ACUTE upper gastrointestinal bleeding is most often caused by gastric or duodenal ulceration, gastritis, and varices. Conservative treatment—lavage, bed rest, volume replacement, and sedation—will benefit 80% of patients with such bleeding. Lower gastrointestinal bleeding is commonly due to diverticular disease, angiodysplasia, inflammatory bowel disease, and neoplasia. Bleeding is usually intermittent.

Care and management of these patients has remained a problem, but there is now increasing interest in the scintigraphic detection of gastrointestinal bleeding. The use of technetium Tc 99m sulfur colloid for the scintigraphic detection of gastrointestinal bleeding has largely been superceded by blood pool imaging.

Winzelberg and colleagues proposed using ^{99m}Tc-tagged red blood cells as a blood pool tracer for detecting gastrointestinal bleeding. Any site actively bleeding within a 24 to 36 hour interval is potentially detectable. Most published series give a sensitivity and specificity for this procedure of about 90%. Bleeding rates of 0.2 to 0.4 ml per minute can be detected. Sequential one-minute views of the abdomen following tracer injection can be stored on computer and displayed in cine mode. This technique allows computerized subtraction of activity in known large blood vessels and other vascular structures. By following the cine display, one may detect the position of extravasated blood at an active bleeding site. A negative study result may obviate the need for emergency angiography and using contrast in patients who are unstable and often elderly.

^{99m}Tc as pertechnetate—not complexed to erythrocytes—can be used to locate ectopic gastric mucosa: Meckel's diverticulum and Barrett's esophagus. Meckel's diverticulum is the most common cause of gastrointestinal bleeding in children younger than 3 years. In a large series of predominantly pediatric patients, Sfakianakis and Conway found that the scanning procedure had a sensitivity of 85%, a specificity of 95%, and an accuracy of 90% for surgically proved ectopic gastric mucosa.

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Emergency Nuclear Medicine Studies

IN recent years nuclear medicine studies have played an ever-increasing role in the emergency setting. Several developments have contributed to this change: nuclear medicine services are more widely available, new radiotracers have become available, image quality has improved, and radiopharmaceuticals are easier to prepare.

Lung scans have been a standard test for detecting acute pulmonary emboli for many years. More recently, radionuclide biliary studies are commonly used in detecting cystic duct obstruction in acute cholecystitis, common duct obstruction, or bile leak. Tagged red blood cell studies are used to detect and localize acute gastrointestinal bleeding and radionuclide venograms to identify acute thrombophlebitis and superior vena cava obstruction.

In addition, a liver-spleen scan is useful in diagnosing fracture, laceration, and hematoma; renal studies in renal artery obstruction and acute renal failure; testicular studies in torsion and acute epididymitis; pyrophosphate cardiac studies in acute myocardial infarction and cardiac contusion; and brain scans in acute viral encephalitis and for determining brain death. The early determination of brain death has taken on increasing importance because of organ transplant programs.

Emergency bone scans may show fractures missed on radiographs because separation has not yet occurred. They can provide an overview of the entire skeleton in a possibly battered child. Bone scans are also helpful in detecting stress fracture, early acute osteomyelitis, septic arthritis, and avascular necrosis.

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A Simple Bedside Method for the Prompt Diagnosis of Brain Death

BECAUSE brain function is the essence of human life, death of this organ is recognized as a criterion of death. Indeed, attempts at resuscitation following cardiac arrest are aimed at sustaining the brain. The Harvard criteria, established in 1968, require 24 hours of electrocerebral silence in appropriate comatose patients in the absence of drug intoxication or hypothermia. A totally flat electroencephalogram is often difficult to obtain reliably. Screening for a variety of drugs required by these criteria is time-consuming and may delay diagnosis. While undue delay is most critical in the case of potential organ donors, a futile attempt at maintaining life in a brain-dead person is very costly and often causes unnecessary anguish for relatives.

Demonstration of a deficit in blood flow to the brain is diagnostic of brain death and is not related to the cause of coma. This absence of circulation can be shown angiographically. There is, however, a justifiable reluctance to moving these fragile, comatose patients, who may or may not be brain dead, from their bedside life support systems to submit them to angiography when they will not benefit directly from this procedure. A critical deficit in cerebral blood flow can be reliably shown by nuclear imaging procedures. Using a portable γ camera, the study can be done at a patient's bedside. The cerebral transit of an intravenously injected bolus of an agent such as technetium Tc 99m pertechnetate, penetic acid (DTPA), or glucoheptonate can be followed by rapid sequential imaging of the head. This dynamic sequence will reliably show the absence of intracerebral blood flow. A static anterior image of the head following the flow study will, in the majority of patients, be confirmatory by showing an absence of activity in the sagittal sinus. In a small number of patients, the sagittal sinus may be visualized even in the absence of brain activity. This is presumably due to ingress of the imaging agent through the emissary veins. This in no way negates an abnormal flow study result.

This nuclear medicine study is essentially free of risk, simple, and absolutely reliable—except in infants. The study may be repeated for further confirmation or if the first examination was technically unsatisfactory. The more up-to-date and rapid diagnostic criteria for the diagnosis of brain death are included in the recommendation of the consultants on the President's Commission on the Diagnosis of Death. The nuclear medicine test is recommended as confirmatory by these consultants.

It is worth noting that this test does not evaluate the posterior fossa. Other tests are available for this and, in any case, in the presence of total supratentorial brain death, demise of the posterior fossa will occur within a relatively few hours.

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Simple Evaluation of Thyroid Function

PHYSIOLOGIC and clinical studies have shown clearly that primary thyroid failure is associated with a compensatory rise in pituitary thyroid-stimulating hormone (TSH) secretion, while an excess of circulating thyroid hormones is associated with a negative feedback inhibition of TSH secretion. Until very recently commercial assays for TSH could detect abnormally high serum levels but were not sensitive enough to distinguish abnormally low values from those found in most normal persons. Consequently, the TSH assay was used primarily to confirm or establish the diagnosis of hypothyroidism. Less commonly, the failure of the serum TSH to rise in response to the administration of thyrotropin-releasing hormone was used to confirm the diagnosis of hyperthyroidism in clinically equivocal cases.

The advent of the ultrasensitive test for thyroid-stimulating hormone, which is capable of detecting levels in serum below those found in normal subjects, is revolutionizing the laboratory assessment of thyroid function. All forms of hyperthyroidism, with the exception of the rare TSH-secreting pituitary adenoma—Graves' disease, toxic thyroid adenoma, Hashimoto's thyroiditis, subacute thyroiditis, or excessive ingestion of thyroxine or triiodothyronine—are associated with serum TSH values well below the defined and measurable normal range of about 0.4 to 6.2 μU per ml. The new type of TSH assay uses two monoclonal anti-TSH antibodies recognizing different determinants of the thyroid-stimulating hormone molecule. Typically, the serum TSH level in thyrotoxic persons is suppressed to 0.05 μU per ml even if clinical signs of disease are mild. The physiologically hyperthyroid state can be diagnosed with assurance even when a patient is asymptomatic; not infrequently, this occurs in a hyperthyroid person taking antithyroid drugs, in hypothyroid patients taking levothyroxine sodium, or in a patient with a thyroid nodule or with surgically treated thyroid carcinoma who is on thyroxine-replacement therapy at a dose designed deliberately to suppress maximally the serum TSH level. Persistently suppressed levels of TSH during treatment with antithyroid drugs indicate that the treatment is inadequate. A fully suppressed serum TSH level correlates well with the failure of serum TSH to rise after administration of thyrotropin-releasing hormone, so the later test should rarely be needed to confirm thyrotoxicosis or to establish that supressive thyroxine treatment is adequate in patients with treated thyroid carcinoma.

A parallel measurement of the serum free thyroxine level is usually recommended to assess the biochemical magnitude of hyperthyroidism. Obvious clinical toxicity is usually associated with values well above the normal range; however, mild hyperthyroidism, as defined by serum TSH suppression, is not infrequently associated with free thyroxine levels in the upper portion (1.6 to 2.3 ng per dl) of the normal range (0.8 to 2.3 ng per dl). Critically ill patients with nonthyroidal illness who are not receiving dopamine have normal pituitary-thyroid function.

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Dipyridamole Myocardial Perfusion Scintigraphy

MYOCARDIAL perfusion scintigraphy using thallium 201 during dynamic exercise is now well established as an important clinical aid for the diagnosis and prognosis of coronary artery disease. A large fraction of patients, a third or more, with known or suspected coronary disease are ill, debilitated, or timid, however, and cannot undergo dynamic exercise stress testing. Others, such as patients after myocardial infarction, should not be or generally are not submitted to a maximal exercise effort. Nevertheless, symptoms in these patients are often atypical or absent despite the fact that they may harbor the most severe, life-threatening disease. Compounding the problem is the fact that many of them often face a significant surgical intervention. Patients with peripheral vascular disease claudicate, and their limited activities prevent the early appearance of cardiac symptoms. Yet, their major morbidity and mortality relate to associated, frequently occult, coronary disease, which is the leading cause of postoperative complications.

Dipyridamole inhibits circulating adenosine deaminase, resulting in reduced degradation and increased levels of the potent arteriolar dilator, adenosine. Administered intravenously, the agent has significant effects on the coronary resistance vessels, the small arterioles, resulting in a threefold to fivefold increment in coronary artery flow through normal vessels. This flow augmentation is limited by a fixed stenosis, however. Animal experiments indicate differential augmentation of coronary perfusion in both normal and stenotic vessels. Coronary flow demands, however, are generally not increased and ischemia is rarely documented, possibly due to a "steal" effect or to an actual flow reduction.

A saline solution containing 0.56 mg per kg of dipyridamole is infused over four minutes with full symptomatic and hemodynamic monitoring. Ingestion of a dipyridamole slurry has also been reported to be effective. Thallium is administered at seven minutes, and images are acquired shortly thereafter and four hours later at redistribution, when basal flow distribution of the radionuclide is restored. Uniform flow augmentation in the absence of significant coronary lesions produces a homogeneous radionuclide distribution and a normal image. The presence of pathophysiologically significant coronary artery lesions causes heterogenous flow augmentation and perfusion image defects. These defects generally disappear on redistribution imaging if they are not related to regions of scarring.

Effects of the drug are generally benign, bringing a mild fall in systolic blood pressure and a mild increment in heart rate. Side effects are also usually mild and relate to systemic vascular dilation with headache, flushing, and nausea. Although ischemic indicators are uncommon, an occasional dramatic ischemic response may be seen and fatalities have been reported. Drug effects can be quickly reversed by intravenous administration of aminophylline, which specifically blocks the vascular adenosine receptors. While the functional correlate of such induced ischemia may be qualitatively assessed in some cases with echocardiography, that method will fail to identify the much more frequently induced perfusion heterogeneity not associated with ischemia.

The diagnostic sensitivity of the imaging method approaches that related to dynamic exercise imaging—in the range of 80% to 90%. Specificity is also high. The test has proved extremely useful and has been noted to influence diagnosis and management in almost 80% of the patients evaluated. Additionally, the method, like dynamic exercise perfusion evaluation, appears to have prognostic value. In several studies done in patients before peripheral vascular and other noncardiac operations, perioperative coronary events were seen only in those with reversible scintigraphic defects. Further, patients with reversible defects were those having coronary events after subendocardial infarction. Test safety in patients after acute infarction and in those with unstable angina has not been fully established.

This pharmacologic method, not yet approved by the Food and Drug Administration, soon is likely to be made widely available for the evaluation of known or suspected coronary artery disease in patients who cannot or should not undergo dynamic exercise evaluation. Despite the apparent advantages, the value of stress-related data and the superiority of exercise-related images make dipyridamole perfusion imaging no substitute for conventional exercise evaluation.

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Case 3-1988

Eighty-Five-Year-Old Male with Hematuria and Frequency

JOHN A PAGNOZZI, M.D.

Case History

AN 85-year-old male with frequency and hematuria was admitted to the hospital for further evaluation. He denied abdominal pain. Physical examination revealed a soft and nontender abdomen. His prostate was moderately enlarged. An intravenous pyelogram was requested (Figure 1). The patient was subsequently referred for a computed tomographic (CT) scan of the abdomen (Figure 2).

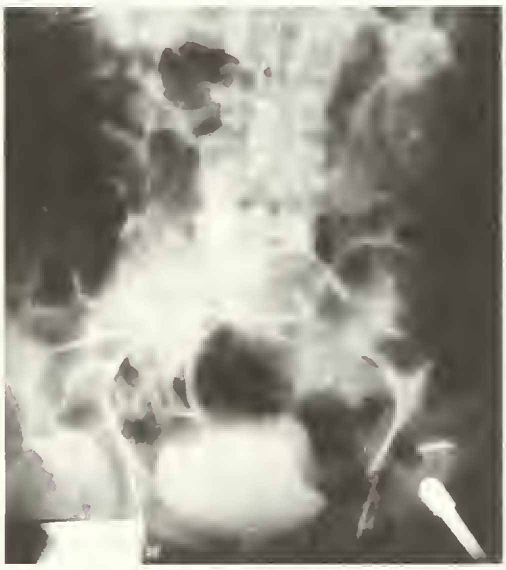

Figure 1

The intravenous pyelogram reveals an abnormal contour of the bladder with a mass effect most prominent on left bladder wall.

Diagnosis:

Abdominal aortic aneurysm with bilateral iliac artery involvement

Discussion

Abdominal aortic aneurysms are usually asymptomatic and are found as an incidental finding on physical examination. Aortic aneurysms originating below the renal arteries can be diagnosed by direct palpation in more than 80% of patients.[1]

When an abdominal aortic aneurysm is discovered in the asymptomatic patient, surgery is indicated on an elective basis. The rationale of this includes the risk of rupture (38% in untreated patients) with its attendent high mortality. It has been shown that the risk of rupture increases with the size of the aneurysm. For this reason an aneurysm 5 cm or greater in its transverse diameter should be resected. Symptomatic aneurysms require operative intervention regardless of size. One must consider associated medical problems in all patients. In a recent study, Bernstein and Chan suggested that the relative contraindications to aneurysm repair should include recent myocardial infarct, intractable congestive heart failure, chronic obstructive lung disease, incapacitating cerebrovascular accident, renal failure, uncontrolled malignancy, and age over 80 years.[2]

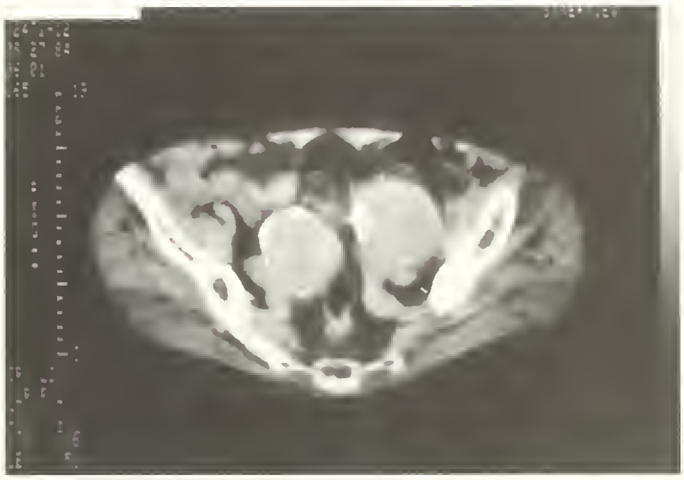

Figure 2

Bilateral iliac artery aneurysms are noted arising from the right and left common iliac arteries with a diameter of 6 cm and 10 cm respectively. The aneurysmal dilatation was noted to originate from the distal aorta (diameter 3.5 cm).

The evaluation of the aneurysm should proceed in an orderly fashion that initially includes noninvasive testing

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(sonogram, CT scan).[3] One is interested in the size and character of the aneurysm, as well as its origin in relationship to the renal arteries and involvement of the iliac vessels. Angiography is not essential to establish the diagnosis, but does aid in evaluating the iliac, renal, and mesenteric vasculature.[4]

In the above case an 85-year-old male presented with an abdominal aortic aneurysm that extended into the iliac vessels. Abdominal examination did not reveal a pulsatile mass. This is probably attributable to the extreme distal aortic involvement in which the aneurysm was initially overlooked. The correct diagnosis was subsequently made.

The patient refused further intervention and left the hospital. Follow-up four years later revealed that the patient had been assaulted and died of a cerebral hemorrhage secondary to his head injury.

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Self-Employment Falls

From 1983 to 1987, the proportion of physicians with full or partial ownership of their main medical practice declined from 76.1% to 73.3% according to data drawn from SMS Core Surveys.

As the table below indicates, among the primary care specialities analyzed, general and family practitioners experienced the greatest decline in practice ownership during this period. In 1983, 83.0% of general and family practitioners and 67.4% of pediatricians had an ownership interest in their main practice; by 1987, those figures had fallen to 77.6% and 61.2% respectively. Among general internists and obstetricians/gynecolgists, practice ownership remained relatively stable.

The proportion of physicians in these specialty areas who are self-employed generally increases with age. The table indicates that in 1983, 60.0% of physicians under 36 years of age were self-employed in contrast to 81.9% of physicians aged 56 to 65 and 78.9% of physicians over 65. In 1983, the proportion of physicians under 36 who were self-employed had declined to 52.7%, while among the two oldest age groups, the proportion of practice owners had remained relatively constant at 81.0%.

Percent of Physicians with Full or Part Ownership in Their Main Medical Practice 1983-1987

	1983	1987
ALL PHYSICIANS	76.1	73.3
Specialty		
General/Family Practice	83.0	77.6
General Internal Medicine	73.9	75.0
Pediatrics	67.4	61.2
Obstetrics/Gynecology	84.4	81.7
Sex		
Male	78.0	76.0
Female	55.9	50.2
Age		
<36	60.0	52.7
36-45	77.5	73.4
46-55	80.2	77.6
56-65	81.9	81.0
>65	78.9	81.0
Location		
Nonmetropolitan	83.2	80.9
Metropolitan (<1 mil)	76.0	75.7
Metropolitan (>=1 mil)	73.5	68.9

— AMA Center for Health Policy Research, Vol. 2, No. 2, March 1988.

A Proposed Alternative to the Civil Justice System for Resolving Medical Liability Disputes

A Fault-Based, Administrative System

AMA/SPECIALTY SOCIETY MEDICAL LIABILITY PROJECT

THE American Medical Association ("AMA"), 31 national medical specialty societies and the Council of Medical Specialty Societies have joined together to create the Medical Liability Project to propose a fair and efficient system of resolving medical liability disputes. Specifically, we propose a system in which such disputes would be adjudicated by an expert administrative agency. This agency can be either a modification of the current state licensing board or a new agency. This Medical Board would also have the power to take appropriate action to identify and rehabilitate or discipline physicians whose practice patterns pose a threat to patients. Because of the radical nature of our proposal, we recommend that it be tried as an experiment in one or more states.

We have endeavored to create a system that is fair and equitable to patients and physicians alike. Medical liability is only a part of the much larger and more important issues concerning the quality of medical care being provided by physicians. Accordingly, in addition to changes in the legal standards for determining medical liability, the proposal includes specific provisions designed to enhance the state medical board's credentialing and disciplinary functions. The administrative scheme proposed in this Report recognizes that physicians, patients and the public have distinct interests which must be respected and evenly balanced in any reasonable attempt to solve the medical liability crisis.

Part I: The Administrative Alternative To The Current Medical Liability System and Improved Credentialing and Disciplinary Processes

A. Rationale for the Alternative

Our proposal arises out of two basic facts. First, the current judicial system for determining professional liability does not compensate a significant number of patients who have been injured by medical negligence. Individuals who have claims which do not involve a substantial potential recovery have difficulty enlisting the services of private attorneys. Thus, the existing system imposes barriers to the courts which preclude plaintiffs from receiving any compensation for injuries caused by medical negligence.

Second, the current tort system, which relies heavily upon juries, is not optimally suited for resolving medical negligence issues. Under the current system, there have been consistent increases in the size of damage awards, especially for non-economic damages. By their magnitude, these awards are threatening the availability and affordability of insurance coverage and health care in many geographic areas in the United States and in many medical specialties. Moreover, juries have tended to award plaintiffs significantly greater amounts in malpractice cases than in cases which concern identical injuries not involving physicians. In addition, the use of juries can be a time-consuming and inefficient way to resolve medical liability disputes. Currently, less than half of the total dollars spent on malpractice insurance ever reach the injured patient.

Because the existing judicial system is not entirely fair either to patients or physicians and is not an effective or efficient method of medical liability dispute resolution, it is reasonable to consider whether an alternative could be developed which would be fairer and more efficient. However, the system of trial by jury has strong historical roots in this country and there are significant constitutional and political limitations on the range of alternatives to the civil justice system that can be implemented even on a limited basis. In particular, there must be a meaningful *quid pro quo* provided to patients in order to justify withdrawing their claims from the jury system—as there is in no-fault automobile and workers compensation systems.

The Medical Liability Project does not suggest a general rejection of the tort system, nor does it advocate the abandonment of traditional tort reform. However, the Project has concluded that a persuasive case can be made for employing on an experimental basis an administrative alternative to the tort system for resolving medical liability disputes. The Medical Liability Project therefore proposes that in one or more states broad authority to handle medical liability disputes be granted to an existing medical disciplinary board or to a new agency so that an administrative system of medical liability compensation can be established. This Medical Board would provide several advantages to patients. The most important

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EDITOR'S NOTE: This is the executive summary from the above-named document, which was prepared by the AMA/Specialty Society Medical Liability Project, and made available to the public in January 1988.

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of these is that the system should permit more injured parties to be compensated than does the current system. At the same time, windfall damage awards would be eliminated, medical liability disputes would be resolved more quickly and efficiently, and certainty and predictability of compensation for medical liability would be increased.

B. The Claims Resolution Function

The administrative system for adjudicating medical liability can be divided into three parts: (1) the prehearing and initial hearing stage; (2) the final decision of the Board; and (3) judicial review. The proposed system would provide a significant benefit to patients by making available to any patient who has a claim of reasonable merit an experienced attorney from the Medical Board's general counsel's office who will litigate the claim on behalf of the patient free of charge.

Under proposed pre-hearing procedures, claims reviewers from the Medical Board will quickly evaluate claims and dismiss those without merit. For claims with merit, the claims reviewers will submit the matter to an expert in the same field as the health care provider. The expert will review the claim and make a judgment as to whether it has merit. The claims reviewer also will assist the patient in evaluating the claim and any settlement offers.

If the claim is not settled, it will be assigned to one of the Medical Board's hearing examiners. In order to encourage reasonable and timely settlements, blind settlement offers by the parties will be required prior to a hearing. A party would be subject to sanctions if the outcome of the case is not an improvement over a settlement offer that the party has rejected. The hearing examiner also will oversee expedited discovery and ensure that the parties have valid expert evidence available to support their case. At the hearing itself, the examiner will have broad authority to conduct the proceedings, including authority to call an independent expert to provide assistance in deciding the case. The hearing examiner will be required to render a written decision within 90 days of the hearing. In that decision, the hearing examiner will determine whether the health care provider is liable for the claimant's injury and, if so, will determine the size of the damage award.

The hearing examiner's decision will be subject to review by the Medical Board. The Board will have discretion to award fees and costs incurred in an appeal if the appeal presented no substantial question. The Medical Board will hear these cases as an appellate body in panels of three members. The Medical Board will make a full independent determination whether the health care provider's conduct was inadequate and caused the claimant's injury. Appeal from the Medical Board's decision will be to the intermediate appellate court of the state, where the review will be limited to whether the Board acted contrary to statute or the Board's own rules.

This proposed scheme will provide experienced and expert personnel at every level in the decision-making process. Over time, they should be better able than a jury to evaluate medical negligence claims. In addition, the involvement of the Board will increase the ability of the decision-making process to be consistent in both liability determinations and the size of damage awards. The proposed administrative system also should be able to resolve disputes more quickly than the current system and thereby save both plaintiffs and defendants the substantial expense incurred in litigating cases for years in court.

In addition to acting as an adjudicator of medical liability claims, the Medical Board also will develop rules and substantive guidelines to complement the statutory standards. The Board will have administrative authority to initiate rulemaking and to solicit public comments. A rule promulgated by the Board will have the force of law and will be subject to judicial review by an appellate court to determine if it is arbitrary, capricious or in excess of the Medical Board's authority.

C. The Performance Monitoring Function

1. In conjunction with its expanded authority to handle medical liability claims, the Board's performance monitoring function will be strengthened. Specifically, all settlements and awards based on medical liability will be reported to the Board's investigative branch. This does not mean that every or even many liability determinations will lead to disciplinary actions. What it means is that every liability determination will give rise to an initial screening of the physician's practices as reported to the Medical Board. The primary purpose of this endeavor, as with all performance monitoring, will be education and rehabilitation. Thus, our proposal is intended to enhance the Board's ability to discover physicians who are impaired, lacking appropriate medical skills or otherwise unable to provide acceptable medical care.

2. In conjunction with the proposals for monitoring physician performance by the Medical Board, our proposal calls for enactment of three categories of changes designed to further strengthen physician credentialing. First, reporting requirements will be increased by requiring hospitals and other health care institutions to conduct periodic physician performance reviews (a modified version of those required by the Joint Commission on the Accreditation of Healthcare Organizations) and to report to the Medical Board any conclusion that a physician's performance has been substandard. Insurers will be required to report cancellations and failures to renew for reasons that are not class based. All physicians will be required to report instances of suspected incompetence, impairment, or drug or alcohol dependence to the hospital credentials committee or other credentialing entity. In order to facilitate physician reporting, the state will provide immunity to physicians who report suspected problems in good faith. All of these reporting requirements

are designed to increase substantially the amount of information available on physician performance.

Second, this information must be maintained in a form that is accessible to those who conduct professional review activities under the proposed system. To facilitate this process, the Medical Board will create and maintain a clearinghouse (or utilize the one established pursuant to the Health Care Quality Improvement Act of 1986) for reports from insurers, reports from hospitals and other entities and disciplinary actions taken by other states. Much of the information that will be collected under this proposal overlaps with the required reporting under current federal law. The licensing board will review this information, on a routine basis, every two years. Immediate review is required in the event of certain negative reports. The Board will also have authority to conduct an on-site review of the medical practices of all physicians against whom a medical liability determination (or settlement) has been made where there is reason to believe that the physician's practices pose a threat to patient health. In addition, certain credentialing entities, such as hospitals, will be required to check with the clearinghouse in connection with credentialing and privilege reviews.

Finally, the Project calls for the furtherance of quality assurance/risk prevention goals by requiring all physicians to complete a number of continuing medical education "credit hours" per year. A certain percentage of these hours must be directly relevant to participate in a risk management program. This change is designed to ensure that physicians maintain and enhance their professional skills.

In addition to the settlements and awards that are automatically reported, performance complaints—from hospitals, physicians, the public or employees of the Medical Board—will be sent to a claims reviewer at the Board for investigation. As with claims of medical liability, the claims reviewer will evaluate these complaints and, if appropriate, make a recommendation to the Board's general counsel's office to pursue complaints that appear meritorious. A member of the general counsel's office will then make a decision whether to initiate a disciplinary charge. Once a disciplinary charge is initiated, a member of the general counsel's office will prosecute the charge before a hearing examiner who, after an appropriate due process proceeding, will make a decision as to what, if any, action is appropriate. The examiner's action is subject to review by the Board, which is required to provide notice of any disciplinary action to credentialing entities, insurers and other state Medical Boards.

D. The Structure of the Board

In order to perform the complex and sensitive functions outlined above, the existing Medical Boards will be restructured or a new agency will be created. Membership on the Board will have to become full time, probably for a five year term. Members will be selected by the governor—from a list of nominees selected by a nominating committee—and approved by the legislature. The Project recommends a seven person Board, of which at least two but no more than three members are physicians. It is also crucial that the Medical Board members be widely recognized as experienced and neutral, and that they be committed to attempting a bold new approach to the problems of medical negligence. To ensure the Board's quality, all of its employees, from claims reviewers to hearing examiners, must be selected and retained on the basis of their ability and commitment to resolving claims efficiently and fairly.

Proper implementation of the administrative model also will require that substantial issues of funding be addressed. With respect to the increased funding requirements of the Board itself, because of the substantial benefits to the public and expected lower overall costs, use of general revenues will be necessary and appropriate. In addition, the state could make an initial assessment against insurance companies, which provide medical liability insurance within the state, or physicians and other health care providers.

Part II: The Legal Elements of Medical Liability

In order to ensure that the administrative model of medical liability passes constitutional muster, it will be necessary to codify the liability rules to be applied by the Medical Board under the administrative system. It will not be enough simply to incorporate by reference existing common law standards. The statute establishing the Medical Board will have to define specifically the standards under which a claim for medical liability is established, although as noted previously, the Board will be expected to exercise its rulemaking authority to fill in the interstices of the statute. The need for codification of the rules governing medical liability provides an opportunity to revise existing rules in a way that furthers the patient's interests in fair compensation, the physician's interest in predictable awards and the public's interest in standards of liability and damages that can be consistently and efficiently applied. Set forth below is a summary of the most important proposed rules of medical liability.

The rules governing standard of care based on custom and locality would be abolished in favor of a standard that focuses on whether the challenged actions fall within a range of reasonableness, to be determined by reference to the standards of a prudent and competent practitioner in the same or similar circumstances. The hearing examiner would be required to consider a variety of factors in determining the range of reasonableness, including the expertise of and means available to the health care provider, the state of medical knowledge, the availability of facilities and access to transportation and communications facilities. With respect to proof of liability, the statute also would set standards for evidentiary matters such as the qualifications of experts, the use of manufacturer's instructions on drugs and medical devices and the use of medical literature.

A significant modification in the causation standard is also proposed. Traditionally, recovery has been denied unless the physician was at least 50% responsible for the patient's loss. The causation standard would be modified to allow recovery if the physician's negligence was a "contributing factor" in causing the injury. Damages under this standard would be apportioned according to the physician's degree of fault.

The informed consent doctrine would be codified under the current "minority" rule which requires that the adequacy of the disclosure should be measured from the perspective of the reasonable patient. The privilege to withhold information (for therapeutic reasons) and standards for determining individual responsibility for disclosure also would be included in the statutory "informed consent" doctrine.

In the area of damages, non-economic damages (and punitive damages) would be capped at an amount that is tied to a percentage of the average annual wage in the state. Special damages would be awarded under a series of guidelines designed to ensure that those damages represent a realistic "replacement cost." For example, in determining the "lost income" of an unemployed minor, the hearing examiner would be required to award damages based on the average annual income in the state multiplied by the average work life expectancy, absent clear and convincing proof that the loss would be greater or smaller.

The rule of joint and several liability would be abolished so that defendants would be liable for damages only in proportion to their actual liability. In addition, any award of future damages, where the present value of such damages exceeds $250,000, would be made in accordance with a periodic payment schedule. Finally, damages generally would be reduced by collateral source payments.

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Multiple Morphine and Enkephalin Receptors and the Relief of Pain

GAVRIL W. PASTERNAK, M.D., PhD

AFTER thousands of years, opiates remain the drugs of choice for severe pain. Their potency and ability to relieve the "hurt" associated with nociceptive stimuli without significantly altering such basic sensations as touch, temperature, and proprioception separate them from all other analgesics. Despite these advantages, side effects such as tolerance, physical dependence, respiratory depression, and constipation greatly limit their usefulness. In addition to these physiological actions of the opiates, their abuse is also a concern, but this remains uncommon in the treatment of acute pain and cancer pain. Opiates mimic the actions of a series of brain peptides and activate endogenous pain-modulating systems by binding to a number of different types of opioid receptors, each mediating distinct actions. Recent work indicates that the receptors responsible for many opiate side effects differ from those producing analgesia, implying that analgesics lacking these unwanted actions may be possible. This article reviews some physiological aspects of the endogenous opioid system and some of the biochemical and pharmacological evidence supporting multiple receptors for morphine and the enkephalins.

ENDOGENOUS OPIOID SYSTEMS

Modulation of Pain Within the Central Nervous System

Pain is highly subjective, dependent on the individual and the situation in which it occurs. Anecdotal experiences overwhelmingly support the observation that nociceptive stimuli unnoticed under some circumstances may be unbearable under others. This issue was first examined objectively by Beecher,[1] who compared the analgesic requirements of soldiers wounded in battle during World War II with civilians undergoing elective surgery in the United States. Despite the greater severity of the soldiers' wounds, their analgesic needs were much less than those of the civilians. The stressful situation associated with combat clearly influenced the pain, implying the existence of central systems capable of modulating pain perception.

Painful sensations can also be dissociated from other basic sensations physiologically and anatomically.[2-4] Nociceptive fibers enter the spinal cord through the dorsal horn, synapse in laminae I, II, and V of the spinal cord, and ascend as the spinothalamic tract, which consists of two divisions, the neospinothalamic and the paleospinothalamic tracts. The neospinothalamic tract ascends to the thalamus, terminates in the ventral posterolateral nucleus, and projects to the somatosensory cortex, where it provides information regarding the quality, intensity, and location of noxious stimuli. The paleospinothalmic tract, conversely, is polysynaptic, with extensive interactions with the reticular system, including the periaqueductal gray, terminates in the medial, intralaminar, and posterior thalamic nuclei, and then projects diffusely to limbic and subcortical areas. This system carries the "hurt" associated with noxious stimuli. Unlike the neospinothalamic tract, the paleospinothalamic tract is not topographically organized and does not project to the somatotopically organized cortex, perhaps explaining the diffuse localization of pain.

Clinically, the differentiation between these two sensory systems is observed as "first and second pain." Following a nociceptive simulus, such as the stick of a pin, the patient quickly feels the pricking sensation, conveyed through the neospinothalamic tract, followed soon afterward by a more unpleasant, poorly localized "second pain" sensation, carried by C fibers through the paleospinothalamic tract. This distinction is important in understanding opiate analgesics, since opiates selectively influence the second pain, or hurt.

Endogenous pain modulatory systems in animals and humans have been documented experimentally. Electrical stimulation of specific brain regions, such as the periaqueductal gray, elicits a profound analgesia in rats[5,6] and in humans,[7] in large part through the activation of descending pathways to the spinal cord.[4] The reversal of the analgesia by the specific opiate antagonist naloxone hydrochloride[8] suggested that the stimulation released endogenous materials that then activated the same receptors as the opiates. This concept is consistent with other studies demonstrating that the periaqueductal gray is one of the few brain regions senstive to the microinjection of morphine.[9] Furthermore, patients and animals show cross-tolerance between morphine and stimulation analgesia.

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Endogenous Opioids

The enkephalins were the first opioid compounds identified within the central nervous system,[10-13] followed soon afterward by β-endorphin,[14-16] dynorphin,[17] and others[18,19] (Table 1). The first five amino acids of all the endogenous opioid peptides contain the structure of either [Met^5]enkephalin or [Leu^5]enkephalin. However, their gene structures clearly indicate that they are distinct peptides.[20,21] Three genes have been identified. One codes for [Met^5]enkephalin and [Leu^5]enkephalin, which are then generated from processing of their common precursor peptide. The second gene codes for dynorphin and α-neoendorphin. The third gene produces β-endorphin, which is obtained from a larger peptide that also generates adrenocorticotropic hormone (ACTH) and α-melanocyte-stimulating hormone.[22-26]

Immunohistochemical techniques[27-33] indicate that the distribution of each peptide is distinct. Cell bodies that contain β-endorphine also stain for ACTH but not for the enkephalins. Conversely, enkephalin-positive cells have neither β-endorphin nor ACTH. β-Endorphin is localized primarily to the pituitary gland; within the brain, only the arcuate nucleus of the hypothalamus possesses cell bodies that stain for β-endorphin. Neurons containing either the enkephalins or dynorphin are widespread throughout the brain.

Table 1.—Structures of Selected Endogenous and Synthetic Opioid Peptides*

Opioid Peptide	Chemical Structure
Endogenous opioid peptides	
[Leu^5]enkephalin	**H-TYR-GLY-GLY-PHE**-Leu-OH
[Met^5]enkephalin	**H-TYR-GLY-GLY-PHE**-Met-OH
[Met^5]enkephalin-Arg^6-Phe^7	**H-TYR-GLY-GLY-PHE**-Met-Arg-Phe-OH
β$_h$-Endorphin	**H-TYR-GLY-GLY-PHE**-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Lys-Lys-Gly-Glu-OH
Dynorphin A	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Arg-Ile-Arg-Pro-Lys-Leu-Lys-Trp-Asp-Asn-Gln-OH
Dynorphin A(1-8)	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Arg-Ile-OH
Dynorphin A(1-9)	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Arg-Ile-Arg-OH
Dynorphin B	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Arg-Gln-Phe-Lys-Val-Val-Thr
α-Neo-endorphin	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Lys-Tyr-Pro-Lys-OH
β-Neo-endorphin	**H-TYR-GLY-GLY-PHE**-Leu-Arg-Lys-Tyr-Pro-OH
Synthetic opioid peptides: enkephalin analogues	
[D-Ala^2,Met^5]enkephalinamide (DAMEA)	H-Tyr-D-Ala-Gly-Phe-Met-CONH$_2$
[D-Ale^2,D-Leu^5]enkephalin (DADL)	H-Tyr-D-Ala-Gly-Phe-D-Leu-OH
FK-33824	H-Tyr-D-Ala-Gly-Phe(N-CH$_3$)-Met(O)ol
Morphiceptin	H-Tyr-Pro-Phe-Pro-CONH$_2$
Metkephamid	H-Tyr-D-Ala-Gly-Phe(N-CH$_3$)-Met-CONH$_2$
[D-Ale^2,MePhe^4,Gly(ol)^5]enkephalin (DAMPGO or DAGO)	H-Tyr-D-Ala-Gly-MePhe-Gly(ol)
[D-Ser^2,Leu^5]enkephalin-Thr^6 (DSLET or DSTLE)	H-Tyr-D-Ser-Gly-Phe-Leu-Thr-OH
[D-Pen^2,D-Pen^5]enkephalin (DPDPE)	H-Tyr-D-Pen-Gly-Phe-D-Pen

*Amino acid sequences of selected endogenous and synthetic opioid peptides. Exact sequences of longer natural peptides will vary with different species. Boldfaced portions represent the four amino acids common to all opioid peptides occurring within the central nervous system.

Opioid peptides are colocalized with other transmitters. The colocalization and corelease of ACTH and β-endorphin is one example. The enkephalins and dynorphin are colocalized with a number of classic transmitters within the brain and with catecholamines in the adrenal medulla, which contains the highest concentration of enkephalins in the body.[34] The hormonal actions of the enkephalins released from the adrenal medulla and β-endorphin from the pituitary gland are still not established.

Although early reports suggested that the enkephalins were analgesic,[35-37] their rapid degradation by peptidases made the studies difficult. Replacing the second amino acid, glycine, with others such as D-alanine, greatly stabilizes these compounds.[38] Using these stabilized derivatives, investigators confirmed observations that the enkephalins were potent, centrally active analgesics. β-Endorphin also produces a strong analgesia. A number of synthetic analogues have been developed (Table 1). Several of these synthetic analogues are active systemically in humans and are being studied in clinical trials.

Multiple Morphine and Enkephalin Receptors

Specific recognition sites, or receptors, for opiates were proposed years ago,[39] and first identified biochemically in 1973.[40-42] A number of opioid-receptor types have been identified and classified by their pharmacological specificity and actions (Table 2).[43-45] Of these, the morphine[46] and enkephalin[47] receptors have been studied most extensively. Using the mouse vas deferens and guinea pig ileum bioassays, Lord and coworkers[47] reported differences between the actions of the enkephalins and morphine and proposed separate receptors selective for either morphine (μ) or the enkephalins (δ). Binding studies quickly confirmed the presence of receptors selective for either morphine-like (μ) ligands or the enkephalins.[48,49] In an autoradiographical setting, the regional distributions of the two classes of sites differed dramatically.[50-52] Of particular interest is the association of μ-, but not δ-, receptors with regions intimately involved with opiate analgesia, including the periaqueductal gray, nucleus raphe magnus, and medial thalamus.

Recently, we proposed two subtypes of μ-receptors and suggested that morphine and the enkephalins label three, not two, receptors (Figure 1).[45,53-59] In addition to the classic morphine-selective (μ_2) receptor identified in the guinea pig ileum and in many of the binding studies described above, morphine and the enkephalins label a distinct receptor (μ_1) with similar, very high affinities. Indeed, morphine and the enkephalins bind to μ_1 sites with greater potency than to their respective selective sites. This concept of a common, high-affinity receptor for two different neurotransmitters is unique in neuropharmacology.

Within the brain, μ_1 sites have a discrete localization, by homogenate binding[60,61] and autoradiographic approaches.[62-64] The periaqueductal gray and the medial thalamus—regions known to play major roles in opioid analgesia—have high densities of μ_1-receptors that correlate well with sensitivity of the animal to morphine analgesia. Moskowitz and Goodman[64] compared the density of μ_1-receptors in two strains of mice that differed dramatically in their sensitivity toward morphine analgesia. The CXBK strain of mouse is highly insensitive to morphine analgesia and has a far lower density of μ_1 in the periaqueductal gray. The density of μ_2 sites did not vary much between the two strains.

The μ_1-receptors appear at a later developmental stage than either μ_2- or δ-receptors and their presence correlates with sensitivity to opiate analgesia.[65] The density of μ_1-receptors also varies phylogenetically, with higher densities noted in higher species.[66] Although all opiate-

Table 2.—Tentative Classification of Opiate Receptor Subtypes and Actions

Subtype	Prototypic Drugs	Proposed Actions
μ		
μ_1	Opiates and most opioid peptides	Supraspinal analgesia, including periaqueductal gray, nucleus raphe magnus, and locus coeruleus Prolactin release Free feeding and deprivation-induced feeding Acetylcholine turnover in the brain Catalepsy
μ_2	Morphine sulfate	Respiratory depression Growth hormone release (?) Dopamine turnover in the brain Gastrointestinal tract transit Guinea pig ileum bioassay Feeding Most cardiovascular effects
δ	Enkephalins	Spinal analgesia Dopamine turnover in the brain Mouse vas deferens bioassay Growth hormone release (?) Feeding
κ	Ketocyclazocine and dynorphin	Spinal analgesia Inhibition of antidiuretic hormone release Sedation Feeding
ϵ	β-Endorphin	Rat vas deferens bioassay Hormone (?)
σ	*N*-allylnormetazocine (SKF10,047)	Psychotomimetic effects Linked to *N*-methyl-D-aspartate

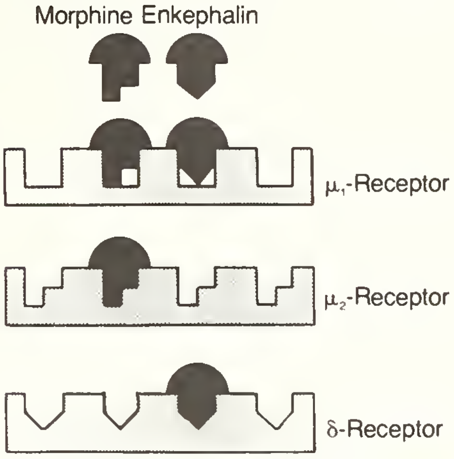

Fig 1.—Schematic of morphine and enkephalin binding sites. In this model, μ_1-receptors bind both morphine and most enkephalins while μ_2- and δ-receptors selectively bind morphine and enkephalins, respectively. Put another way, morphine activates μ_1- and μ_2-receptors, while most enkephalins activate μ_1- and δ-receptors (adapted from Goodman and Pasternak[62]).

receptor binding is sensitive to proteolytic enzymes, such as trypsin and reagents that attack sulfhydryl groups such as *N*-ethylmaleimide, μ_1 binding is far more sensitive to these treatments than are either μ_2- or δ-receptors.[54]

One technical difficulty with studying μ_1 binding is its low density relative to the other receptor types. One approach is the use of sophisticated computer modeling, which has confirmed μ_1-receptors.[67-69] More recently, we developed a μ_1 binding assay in which greater than 80% of specific binding corresponds to μ_1-receptors.[70] This approach should greatly facilitate the characterization of this site.

Many of the studies described above were greatly facilitated by naloxonazine and naloxazone, two μ_1-selective antagonists.[53,54,56,57,71-73] Under specified conditions, both compounds selectively block μ_1 sites either in vivo or in vitro. These compounds have been used extensively in binding studies and have played a major role in identifying the pharmacological actions of μ_1-receptors.

OPIATE PHARMACOLOGY

Analgesia

Opiate analgesia is mediated through a complex interaction of μ-, δ-, and κ-opiate receptors (Table 2). Supraspinally, μ-receptors seem to be most important, whereas the δ and κ sites are involved at the spinal level. Administered in vivo, the μ_1-selective antagonists naloxonazine and naloxazone selectively block μ_1 binding sites and antagonize morphine analgesia in mice and rats for longer than 24 hours.[56,57] Further testing reveals that μ_1 blockade also reduces the analgesic actions of many different opiates and opioid peptides that also label μ_1-receptors.[74-79] Thus, μ_1-receptors are important in opiate analgesia.

Experiments examining the effects of spinal transections suggested a supraspinal role for μ_1-receptors,[75] a result confirmed by more detailed microinjection studies.[79] As noted earlier, microinjection of morphine into specific brain regions, such as the periaqueductal gray and the nucleus raphe magnus, produces a profound analgesia. We replicated these findings and then demonstrated that μ_1-blockade antagonized the analgesia. We also examined the actions of two enkephalin derivatives, [D-Ser^2,Leu^5]enkephalin-Thr^6 (DSLET) and [D-Pen^2, D-Pen^5]enkephalin (DPDPE). Both of these compounds have high potency at δ-receptors, but only DSLET labels μ_1-receptors.[80] Microinjection of DSLET into both brain regions also elicited analgesia, but DPDPE was inactive. Furthermore, naloxonazine antagonized DSLET analgesia in both areas.

The suggestion of μ_1 analgesic mechanisms in the periaqueductal gray and nucleus raphe magnus is consistent with autoradiographic studies demonstrating high levels of μ_1-receptors in both regions.[62-64] In these autoradiographic studies, the levels of δ-receptors are low, perhaps explaining the inactivity of DPDPE, and arguing strongly against a δ mechanism in these areas. The potency of DSLET, which labels μ_1- but not μ_2-receptors, suggests that μ_2 receptors are not important in analgesia in these regions, but a potential role of μ_2-receptors has not yet been conclusively ruled out.

Spinal level analgesia involves other receptor types. In a set of classic studies, Yaksh and coworkers[81-83] reported that the opioid peptides are more potent analgesics at the spinal cord level following intrathecal administration than morphine. Similar results have been reported in humans.[84] Although the number of subjects was small, the δ ligand [DAla^2,D-Leu^5]enkephalin (DADL) was up to fivefold more potent than morphine when both were administered intrathecally. Epidural and intrathecal morphine is effectively used to treat pain. However, morphine binds poorly to δ-receptors. If δ-receptors mediate opiate analgesia at the spinal level, morphine would not be the drug of choice and drugs more active at δ-receptors might provide even better analgesia.

Respiratory Depression

The identification of two subtypes of μ-receptors has had major implications in understanding opiate action. The two major side effects influencing the clinical use of opiates are respiratory depression and the inhibition of gastrointestinal tract motility, leading to constipation. Both actions seem to be mediated through μ-receptors,[85,86] but of which subtype?

Morphine elicits respiratory depression in a dose-dependent manner, which can be objectively assessed using arterial blood gas values.[87] In a time-action study, naloxonazine virtually eliminates the elevation of tail-flick latency, a test of analgesia, produced by morphine sulfate (3.5 mg/kg, given intravenously) without affecting the drop in oxygen pressure (tension) (Po_2) or the rise in carbon dioxide pressure (tension) (Pco_2) (Figure 2, left). In dose-response studies examining peak effects, μ_1 blockade with naloxonazine shifts morphine's analgesic curve fourfold to the right without shifting the response curve for respiratory depression (Figure 2, right). These findings confirm the role of μ_1 sites in analgesia, but argue strongly against their involvement in respiratory depression.

Tolerance

Continued use of opiates leads to a gradual loss of activity and drug dosage must be increased to maintain an analgesia. In general, most opiate analgesics used clinically demonstrate a large degree of cross-tolerance. Preliminary work from our laboratory suggests that tolerance to opiate actions develops at different rates depending on the receptor subtype involved. In our continuous morphine-infusion model, analgesic tolerance develops quickly over six to eight hours, whereas respiratory depression, determined with arterial blood gas values, during the same period remain unchanged. If these studies carry over into humans, they suggest that as tolerance develops and the dose of opiate is raised to maintain analgesia, the therapeutic index falls and the patient

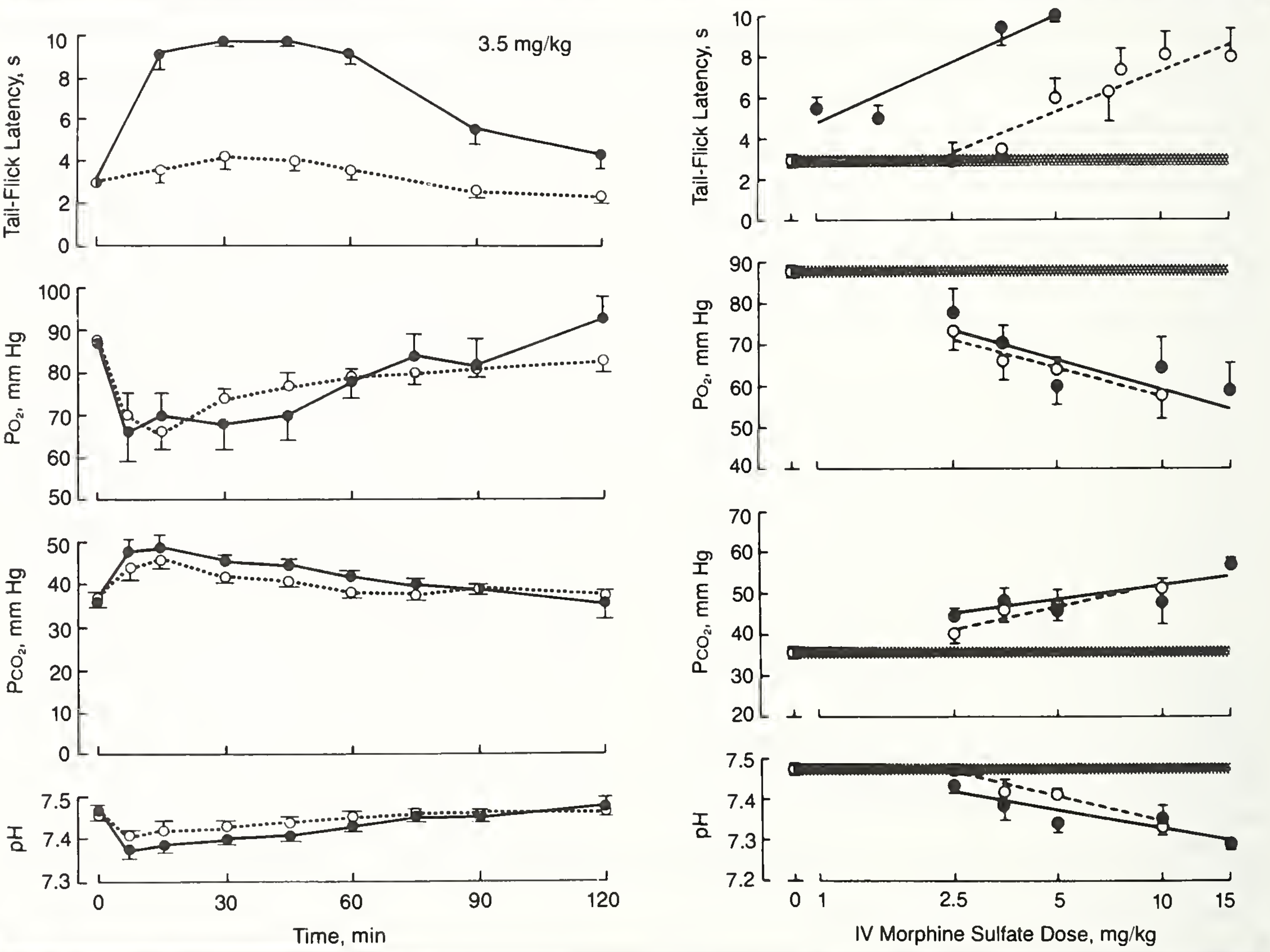

Fig 2.—Effects of μ_1-blockade by naloxonazine on morphine sulfate analgesia and respiratory depression. Analgesia was measured in rats using classic tail-flick assay. In this assay, strong light is focused on rat's tail and time elapsed before rat flicks its tail out of light beam to terminate trial, or latency, is measured. Opiates, such as morphine, prolong latencies, presumably by relieving discomfort, and provide measure of analgesia. Blood gas levels were directly measured from arterial samples taken from indwelling cannulae without disturbing animals. Rats were implanted with cannulas in femoral artery through which arterial blood gases were drawn and in femoral vein through which morphine was administered. Pco_2 indicates carbon dioxide pressure (tension), Po_2, oxygen pressure (tension). Left, Time action curve of analgesia (tail-flick latency) and respiratory depression following intravenous (IV) morphine sulfate administration (3.5 mg/kg) in control (solid circles) and naloxonazine-treated rats (open circles). Right, Dose-response relationship for morphine in control (solid circles) and naloxonazine-treated rats (open circles), based on peak effects (from Ling et al[87]).

becomes more susceptible to adverse side effects such as respiratory depression.

In general, most opiate analgesics used clinically demonstrate a large degree of cross-tolerance. The involvement of multiple receptor classes in analgesia opens the possibility of selective analgesics without cross-tolerance Following the development of tolerance to a μ_1-selective drug, for example, the patient could be switched to a δ compound and regain analgesic activity. Some evidence supports this possibility in humans.[84] In the intrathecal morphine and DADL studies, some of the patients highly tolerant to morphine were sensitive to DADL analgesia. Additional studies are needed to address this issue more directly.

Gastrointestinal Tract Transit and Constipation

Morphine inhibits gastrointestinal tract transit, producing clinically significant constipation that can be difficult to manage. In animal studies, the receptors mediating constipation differ from those responsible for analgesia. The greater relative potency of morphine compared with the enkephalins in the guinea pig ileum[47] immediately suggested a morphine-selective, or μ_2-receptor. Unlike analgesia, morphine action in the guinea pig ileum bioassay is not affected by naloxonazine.[88] Furthermore, binding assays revealed only μ_2, not μ_1-, receptors in the nerve plexus of the ileum. The central effects of morphine on gastrointestinal tract transit are also mediated through μ_2-receptors.[89]

Physical Dependence

Physical dependence, defined by a series of physiological changes associated with continued opiate administration, is a major issue in the long-term use of opiates, although it is independent of addiction liability or abuse potential. Either withdrawal of use of the opiate or the administration of an antagonist elicits a number of well-established signs and symptoms. Does the withdrawal syndrome represent a fixed, unalterable constellation of signs and symptoms, or can the syndrome be broken into sets of signs and symptoms associated with specific receptor subtypes? This question has major implications regarding our ability to eliminate or modify physical dependence with highly selective opiate analgesics. If the syndrome is the summation of a number of different receptor actions, then highly selective drugs should elicit very limited physical dependence.

Intravenous infusion of morphine in rats produces a well-defined and quantifiable withdrawal syndrome. We examined physical dependence by blocking μ_1-receptors with naloxonazine and then infusing rats intravenously with morphine to make them drug dependent.[90] The reduction in analgesia confirmed the blockade of μ_1-receptors. Almost all the signs of withdrawal observed in control rats were also observed unchanged in the μ_1-blocked rats, implying first, that withdrawal is best interpreted as the summation of actions of a variety of receptor subtypes, and second, that μ_1-receptors do not appear to mediate most of the signs of morphine withdrawal. Although additional studies are needed, these results raise the possibility of opiate analgesics with greatly reduced physical dependence.

Other Actions

Other opiate actions examined include the release of prolactin and growth hormone, feeding, acetylcholine and dopamine turnover, and catalepsy[45] (Table 2). Some involve μ_1 mechanisms, such as prolactin release and acetylcholine turnover, while others do not. Emphasis has been placed on analgesia and the standard opioid actions described above. However, the opioid peptides and their receptors are widely distributed throughout the brain and their physiological and pharmacological functions are largely unknown. Is is possible that these unknown functions may prove more important in the future than those appreciated now.

CONCLUSION

Pain transcends the boundaries of medical subspecialties and faces virtually all physicians. The control of pain is a skill that should be mastered by all. Over the past decade we have witnessed a veritable explosion of information regarding the modulation of pain. New types of analgesics action peripherally offer much potential, but opiates are still the most effective drugs for severe pain. The discovery of the endogenous opioid systems has provided insights into the action of these drugs. In the pharmacological setting, the most important discovery has been the identification of multiple classes of opiate receptors. The development of highly selective drugs lacking side effects such as respiratory depression, constipation, and dependence has been the goal of the opiate field for over a century. Recent advances in our understanding of the role of multiple receptors in opiate action bring us closer to this goal than ever before.

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Guidelines for Quality Assurance

AMA COUNCIL ON MEDICAL SERVICE

AT the 1986 Annual Meeting, the House of Delegates adopted Council on Medical Service Report A on "quality of care." That report identified eight essential elements that characterize care of high quality and presented a series of nine "Guidelines" for the conduct of quality assessment, the process by which the quality of medical care delivered is monitored and measured. At the 1987 Annual Meeting, the Council's Report A described the operation of five specific quality assessment systems that are under way or planned and discussed how specific features of these systems illustrated the quality assessment guidelines in an operational way.

A comprehensive program for managing the quality of care includes not only quality assessment but quality *assurance* activities, designed to assist practitioners in modifying practice behavior found to be deficient by quality assessment, to protect the public against incompetent practitioners, as well as to modify structural or resource deficiencies that may exist.

Guidelines

To supplement the quality assessment guidelines and to assist further in the development of effective quality management programs, the Council has prepared the following guidelines for the conduct of medical quality assurance activities directed toward practitioner competence. These guidelines are based on the Council's continuing study of this subject and ongoing discussions with other groups concerned with improving the quality assurance process. The Council believes that they should be utilized in any medical peer review system, whether voluntary or government mandated and whether conducted by medical societies, medical groups or foundations, hospital medical staffs, payers, corporate review programs, or federal agencies.

1. *The general policies and processes to be utilized in any quality assurance activity should be developed and concurred with by the professionals whose performance will be scrutinized and should be objectively and impartially administered.* Such initial involvement with and commitment to ongoing objectivity is critical to ensuring continued participation and cooperation with the program.

2. *Any remedial quality assurance activity related to an individual practitioner should be triggered by concern for that individual's overall practice patterns, rather than by deviation from specified criteria in single cases.* Because of the inherent variability of patients and biologic systems, judgment as to the competence of specific practitioners should be based on an assessment of their performance with a number of patients and not on the examination of single, isolated cases, except in extraordinary circumstances.

3. *The institution of any remedial activity should be preceded by discussion with the practitioner involved.* There should be ample opportunity for the practitioner to explain observed deviations from accepted practice patterns to professional peers, before any remedial or corrective action is decided on.

4. *Emphasis should be placed on education and modification of unacceptable practice patterns rather than on sanctions.* The initial thrust of any quality assurance activity should be toward helping the practitioner to correct deficiencies in knowledge, skills, or technique, with practice restrictions or disciplinary action considered only for those not responsive to remedial activities.

5. *The quality assurance system should make available the appropriate educational resources needed to effect desired practice modifications.* Consistent with the emphasis on assistance rather than punitive activity, any quality assurance program should have the capability of offering or directing the practitioner to the educational activities neeeded to correct any deficiencies, whether they be peer consultation, continuing education, or self-learning and self-assessment programs.

6. *Feedback mechanisms should be established to monitor and document needed changes in practice patterns.* Whether conducted under the same auspices or separately, linkages between quality assurance activity and a quality assessment system should allow assess-

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Members of the Council on Medical Service include the following: Donald K. Crandall, MD, Muskegon, Mich, Chairman; Robert C. Babkowski, MD, Rochester, NY; Daniel K. Billmeyer, MD, Oregon City; Robert D. Burnett, MD, Los Altos, Calif; Roy R. Deffebach, MD, Redwood City, Calif; John A. Finkbeiner, MD, New York; T. Reginald Harris, MD, Shelby, NC; Perry A. Lambird, MD, Oklahoma City; Kermit L. Newcomer, MD, La Crosse, Wis; Albert J. Osbahr, MD, Huntington, WVa; Mariio E. Ramirez, MD, Rio Grande City, Tex; Grant V. Rodkey, MD, Boston; and Nicholas M. Griffin, Chicago, Secretary.

From the Council on Medical Service, American Medical Association, Chicago.

This report is based on the Council's Report C as adopted by the House of Delegates of the American Medical Association at the December 1987 Interim Meeting, with subsequent minor editorial modifications.

ment of the effectiveness of any remedial activities instituted by or for a practitioner.

7. *Restrictions or disciplinary actions should be imposed on those practitioners not responsive to remedial activities, whenever the appropriate professional peers deem such action necessary to protect the public.* Depending on the severity of the deficiency, such restrictions may include loss of medical and medical specialty society membership, loss or revocation of specialty board certification, restriction or rescission of hospital staff privileges, third-party payment denials, or suspension or revocation of licensure.

8. *The imposition of restrictions or discipline should be timely, consistent with due process.* Before a restriction or disciplinary action is imposed, the practitioner affected should have full understanding of the basis for the action, ample opportunity to request reconsideration and to submit any documentation relevant to that request, and the right to meet with those considering its imposition. However, in cases where those considering the imposition deem the practitioner to pose an imminent hazard to the health of patients, such restrictions or disciplinary actions may be imposed immediately. In such instances, the due process rights noted above should be provided on an expedited basis.

9. *Quality assurance systems should be structured and operated so as to ensure immunity for practitioners conducting or applying such systems who are acting in good faith.* As indicated in Board of Trustees Report Z, filed at the 1987 Annual Meeting, the American Medical Association Committee on Medicolegal Problems is reviewing state and federal legislation as well as pertinent court decisions as the basis for developing comprehensive guidelines on immunity in peer review activities for both members and nonmembers.

10. *To the degree possible, quality assurance systems should be structured to recognize care of high quality as well as correcting instances of deficient practice.* The vast majority of practicing physicians provide care of high quality. Quality assurance systems should explore methods to identify and recognize those treatment methodologies or protocols that consistently contribute to improved patient outcomes. Information on such results should be communicated to the professional community.

Recommendation

The Council on Medical Service recommends that the House of Delegates endorse these guidelines for quality assurance and encourage their incorporation and use in any system designed to ensure the quality of medical care.

The Council will continue its study of quality assurance activity as it relates to these guidelines and, as appropriate, will submit further reports to the House of Delegates regarding application of the guidlines in specific quality assurance programs.

AROUND THE STATE

Society Launches New Section: CSMS-HMSS

Hospital Medical Staffs Organize

Thirty-three hospital medical staff representatives attended the first business meeting of the Society's new Hospital Medical Staff Section on April 27 at CSMS headquarters in New Haven. After the Council's authorization, the new section had been developed by a steering committee organized by the CSMS Committee on Hospitals under the chairmanship of Ed Dunn, M.D., of Waterbury.

Franklin Brosgol, M.D., of New York, the Secretary of the national AMA-HMSS, welcomed the delegates after dinner. He emphasized the point that both the AMA and state medical societies must have such "grassroots" organizations that can bring local issues up to the hierarchy quickly, through direct access from each hospital staff.

First CSMS-HMSS Officers Named

The Section's first officers were nominated and elected at the meeting. CSMS-HMSS Chairperson for the 1988-89 year is Howard Meridy, M.D., a Torrington anesthesiologist. Vice-Chairperson is Peter Immordino, M.D., a surgeon of New London. Secretary is Arturo Villa, M.D. of Stafford Springs, a pathologist. Given the success of the pending CSMS bylaw amendment formally establishing the new section within the CSMS structure, John Sussman, M.D., an obstetrician of New Milford, and Harvey Kahaner, M.D., a Manchester otolaryngologist, will serve as the Section's delegate and alternate delegate to the CSMS House of Delegates.

After these elections, Dr. Dunn turned the Chairman's gavel over to Dr. Meridy, and the Section proceeded to adopt procedures, budget recommendations, and to act on an issue referred to it from the CSMS Council, the question of mandatory HIV testing for all surgical patients.

HMSS Rejects Mandatory Presurgical HIV Testing

Following lengthy and vigorous discussion by nearly all of those present, it was recognized that physicians are responsible to others to determine who are the high-risk patients and to encourage HIV testing in those circumstances with permission and followup. Meanwhile, protection must be afforded through universal precautions against all unknown risks, including those from infected individuals who test negative.

The following motion was presented and adopted by a majority vote as a recommendation to the Council: **"It is the recommendation of the CSMS-HMSS that testing for HIV antibodies not be mandatory for all admitted hospital patients, but the following policies be observed:**

1. **Rigorous use of universal precautions as proposed by OSHA.**
2. **HIV testing of individuals in high-risk populations prior to hospitalization when possible, with proper informed consent and counseling."**

Editorials

Diabetic Retinopathy: What You Should Know

Diabetic retinopathy is the second leading cause of permanent blindness in the United States, the leading cause in people aged 25-60.[1] Diabetics have 28 times the risk of blindness compared with nondiabetics. Serious retinopathy may occur in both type I and type II diabetics.

The earliest changes seen in the diabetic retina are formation of microaneurysms in the retinal capillary bed. As the disease progresses, hemorrhages are seen in the retina. The veins may become dilated and tortuous, and lipid exudates form. Cotton wool infarcts signify areas of capillary closure. These changes are called background or nonproliferative diabetic retinopathy; they may be found in 10% of type II diabetics at the time of diagnosis, with the incidence rising to at least 90% in all diabetics after 15 years. Diabetic macular edema refers to thickening of the central retina (macula) as fluid and lipoproteins leak from the damaged capillary bed. Macular edema is seen in 9% of the diabetic population, and is the leading cause of visual loss in diabetes.[2]

Proliferative diabetic retinopathy refers to the growth of new blood vessels on the optic nerve or retinal surface. After 20 years of diabetes, approximately 20% of all patients will have proliferative changes, predisposing to vitreous hemorrhage and retinal detachment. Proliferative retinopathy is the main cause of profound visual loss in diabetics.

Laser photocoagulation treatment of diabetic retinopathy can greatly reduce the risk of visual loss in affected patients, as has been demonstrated by collaborative studies sponsored by the National Eye Institute.

The Diabetic Retinopathy Study conclusively demonstrated the benefit of laser photocoagulation for proliferative diabetic retinopathy. Treatment reduced the risk of severe visual loss by 61%.[3]

The Early Treatment of Diabetic Retinopathy Study demonstrated the benefit of laser treatment in the management of diabetic macular edema. Treated patients were half as likely to lose vision as untreated patients.[4]

Vitreous surgery has been used to treat complications of proliferative retinopathy, such as vitreous hemorrhage and retinal detachment. Technological advances and refinements of surgical technique have reduced complications and dramatically improved results. Many patients who until recently would have been blind can now be successfully treated. The Diabetic Retinopathy Vitrectomy Study demonstrated the benefit of early vitrectomy in the management of vitreous hemorrhage in type I diabetes.[5]

These studies highlight the advances that have been made in treatment of diabetic retinopathy. The general physician, internist, and endocrinologist are in the front line of management of this disease and should be familiar with its presentation and treatment. Symptomatic patients must be referred promptly to the ophthalmologist; more importantly, regular medical eye care must be encouraged for all diabetic patients.

Jerry Neuwirth, M.D.

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Who Assures Quality Assurance?

The medical profession has never lacked challenges, whether scientific or socioeconomic. But the newest challenge touches perhaps more closely than any earlier one to every procedure we perform and every judgment we make.

It is the demand for quality medical and health care, coupled with new systems and new methods of evaluating and measuring it.

The Search for Quantified Quality Control

The people supporting, inventing or using quality measurement techniques—who are both inside and outside of our profession—want to see the science and art of medicine subjected to the same quantified quality control as other industries. They believe it both can and must be done.

For one thing, they want buyers of care (insurance carriers, businesses, individual patients, industries and the government at every level) to be able to choose providers based on objective information about how good the providers' clinical results are and how cost-efficient their practices are. For another, they want to give physicians better tools to evaluate their own work

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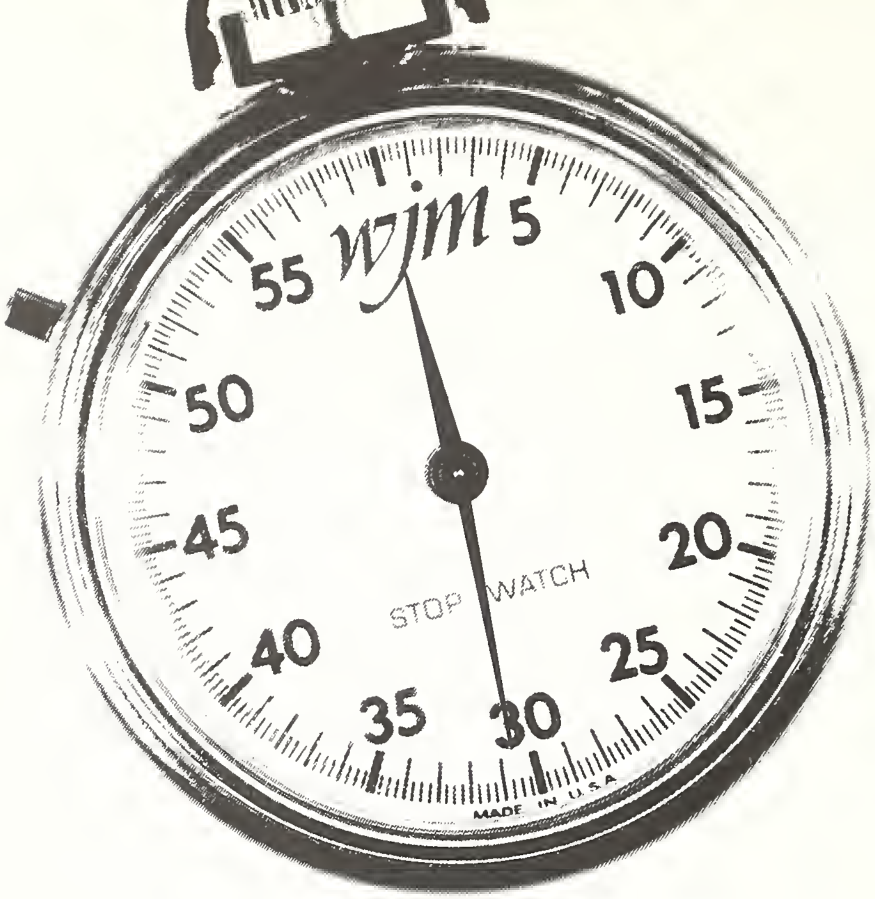

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and that of their colleagues, so the profession can and will police itself more effectively.

Government and Private Activities

The federal government is expanding the work of its PROs (professional review organizations) in overseeing the care of Medicare patients: first, to HMOs and other competitive medical plans with Medicare risk contracts; later on, to outpatient surgery, nursing home and home health care programs. The law will even permit PROs to conduct reviews in physician offices, but the Health Care Financing Administration (HCFA) doesn't see it happening that soon.

The HCFA is also looking for ways to measure an individual physician's hospital mortality rate (that is, the number of hospitalized patients under the care of a particular physician who die in the hospital) and to publicly release this information.

In addition to government activities, at least five commercial computerized systems claim to generate statistics that make possible evaluation of quality of care by measuring severity of illness. Pennsylvania has passed a law requiring that all hospitals in the state adopt Medis-Groups, one of the five. The other systems are: Computerized Severity Index, Patient Management Categories, Clinical Staging and Apache II (Acute Physiology and Chronic Health Evaluation)—all names we will doubtless hear more and more about.

The Profession Advocates High Quality Care

Fortunately, our profession is right on top of this challenge, as we have always tried to be with the problems we face as physicians. The AMA was founded to help assure high quality medical care—to realize its goal of "promoting the science and art of medicine and the betterment of public health." It continues today to pursue every possible avenue to assure that all medical care is of high quality. This is not an area or a judgment that we want to abandon to anybody else, nor to computers, no matter how well programmed.

At its annual meeting last year, the AMA House adopted confirmation of its determination regarding quality by stating to the world that: "The American Medical Association is unequivocally committed to ensuring the provision of high quality medical care to all individuals," and will "aggressively promote organized and systematic quality assessment and quality assurance activities as an integral aspect of the day-to-day practice of every physician regardless of the treatment setting."

Be Sure the Measurements and Their Interpretation are Good

The AMA wants to make sure that any measurement and evaluation systems used are valid. Equally important is that the people who interpret and apply the findings are medically competent to do so.

Consequently, the AMA's quality strategy includes four major steps:

- Provision of publications and conferences on the subject of medical quality.
- Evaluation of existing and future measurement systems to help medical staffs and other physicians determine which systems, if any, they should adopt.
- Provision of quality assurance protocols to hospital medical staffs and group practices. The protocols will be designed, among other things, to make appropriate use of valid data produced by the new computer-based quality evaluation system.
- Continuation of professional programs regarding quality assurance policy development.

AMA Staff Programs Being Developed

The new Office of Quality Assurance will carry out many activities, including the development of: a newsletter and clearinghouse, a series of reports on quality evaluation and assurance, and continued research on criteria for evaluating quality measurement systems.

Ours is the Most Important Part of the Job

The main part of the job for the foreseeable future lies with us—the practicing physician. If every patient of ours is to receive high quality medical care, it is our responsibility to make it happen. Without our particpation, nothing else that organized medicine does will be able to assure quality care for all patients, in all settings, under all circumstances.

AMA Division of Communications

The Connecticut State Medical Society Medical Courtesy Card Program

As many people are aware, the Connecticut State Medical Society (CSMS) Medical Courtesy Card Program will cease to exist as a *voluntary* program, effective July 1 of this year, and will become a *mandatory* program run by the State of Connecticut. Inasmuch as there continues to be some confusion about our program, I would like to clarify our position and reasons for establishing it.

Four years ago, long before mandatory assignment legislation became law in Massachusetts, we sought meetings with the American Association of Retired Persons (AARP) in Connecticut. We wanted to exchange ideas with AARP group chapters throughout the state and to learn of senior citizens' concerns in health care matters. One of those concerns expressed was the need for low-income elderly to receive assignment—that is, for the physician to waive the difference between the Medicare allowed fee and the physician's normal charge.

Connecticut physicians have always been more than willing to accept assignment for those in need ever since the inception of Medicare. But some of our elderly were "falling through the cracks" because there was no mechanism in place to advise physicians of their patient's financial plight, and some seniors were reluctant to ask for assignment. One of the many positive things about the Medical Courtesy Card was that the program's income guidelines and eligibility levels eliminated the need for guesswork and precluded a needy senior from being bypassed.

Connecticut is known as the most affluent state in the country based on its highest per capita income in the nation. While our state is among those with the highest proportion of comfortably retired and pension elite retirees in the country, we must not be misled by these figures. Sadly, there are many pockets of poverty in the state which include a number of our senior citizens. Some 63% of our elderly are women, many of whom live alone and whose income is considerably less than men. Minority elderly men and women are inordinately represented in the poverty figures. The point is that while many of our senior citizens are handling retirement comfortably, a sizable number do not enjoy those advantages and are in need of help. The Irish poet William Butler Yeats' opinion that "old age is nothing but a tattered coat upon a stick" may not apply to the elderly as a group, but the description is not so far off for increasing numbers of senior citizens.

Because of these factors, the Connecticut State Medical Society expanded statewide a Hartford County Medical Association Medical Courtesy Card Program to assure that all low to moderate income elderly would automatically receive assignment by merely presenting a Courtesy Card to their physician.

Most people do not realize that the Medicare allowable fee ranges anywhere from 40% to 80% of a physician's normal charge, averaging out to about 68%. Therefore assignment represents a significant discount to a Medicare patient, a gesture that physicians have been pleased to make for those who need help. It is universally recognized that the Medicare-allowed fee is not equitable. The problem is not that physicians charge too much but that Medicare allows too little.

In Massachusetts where no Medical Courtesy Card Program was in place, mandatory assignment legislation was passed for all seniors regardless of income. The income levels for our program, which becomes mandatory on July 1 and which includes 68% of Connecticut's elderly, are $19,950 for single seniors and $24,000 for a couple. No doubt there will be pressure on our legislators to raise those income guidelines next year, but we believe that they are very generous and already exceed those of any other Connecticut program. To expand them any further would impact adversely on younger residents of our state and would be particularly unfair to those physicians who have a high Medicare patient load.

Over the past two years some elderly groups, arguing for mandatory assignment, have clamored that "we have paid for it and deserve it." They do deserve Medicare benefits, and no one in his or her right mind would deny them these benefits, but assignment is something else. Medicare Part B benefits (which include physicians' services) are financed only 23% through premiums paid by senior citizens. The other 77% comes from the "general fund" which is a euphemism for the income taxes paid by the rest of the population. Therefore, Medicare is already being subsidized by those other than Medicare recipients. To ask younger people to further subsidize Medicare, through a mandatory assignment program for affluent seniors, would constitute an unfair and unnecessary burden on them.

There are many problems in the Medicare program, from the perspectives of both our elderly and their physicians, but despite these shortcomings—on average retirees can expect to receive $28,255 in Medicare benefits in the course of their senior years after having paid only $2,640 in Medicare taxes. The CSMS Medical Courtesy Card Program addressed successfully the need to assure assignment for those who needed help. Thanks to our program, the assignment rate climbed from 64% in January of 1987 to 77% in April of 1988. That means that the number of claims taken on assignment goes well beyond even the 68% of the elderly eligible in our state. Recognizing the worth of our program, physician groups in numerous other states have emulated the Medical Courtesy Card and have set up or are in the process of establishing it in their areas.

With such a program in place to assure that low income elderly do not fall "through the cracks" with regard to Medicare assignment, we ought now to focus our attention on the major problems that affect not only our senior citizens but the rest of Connecticut's population. Deserving special scrutiny is the issue of long-term nursing home care to which mandatory assignment pales by comparison. It is interesting to note, although little understood, that of those Medicare enrollees experiencing out-of-pocket medical expenses greater than $2,000, 81% of those expenditures went for long-term nursing home care and only 6% went to physicians.

Governor William A. O'Neill's Task Force has done an admirable job in studying the problem of long-term care, and it behooves the rest of us to work together towards solutions. The Congress is presently debating several alternatives to alleviate a gigantic problem which cost $42 billion this past year and which has stripped the life savings from so many of our elderly. Very few people, young or old, are not touched in some way by this tragedy.

The concept of the CSMS statewide Medical Courtesy Card Program, like other good ideas, will outlast its critics. The State of Connecticut through the Department of Aging will administer it, effective July 1, when it becomes mandatory. But the important principle that physicians strove for will still exist—that is, those seniors who need help will continue to receive it, but those who do not need assignment because of higher incomes will be treated like everyone else. Connecticut can be proud of its physicians who cared so much about their elderly patients that they were the first in the country to acknowledge the need for a formal program to help low to moderate income elderly—and who went ahead and established one at their own expense.

Timothy B. Norbeck
Executive Director
Connecticut State Medical Society

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TAKING A CLOSER LOOK AT M.D. HEALTH PLAN

Last year, seventeen hundred CSMS physicians purchased stock and created a unique new health maintenance organization: M.D. Health Plan. CSMS leaders reported their motivation as a deep concern that the physician/patient relationship was being eroded, and that clinical control of patients was being wrenched from physicians by insurance carriers. Moreover, nonmedical outsiders were controlling increasing portions of physician cash flow.

The creation of M.D. Health Plan now seems to have been prophetic and timely, with the buyout/takeover in the last 12 months of three of the state's largest HMOs (CHCP, CHN, and most recently, Healthcare, Inc.) by megainsurer Blue Cross/Blue Shield. Indeed, M.D. Health Plan may be the last alternative where physicians can truly maintain professional control through their outright and total ownership of the financing system.

Douglas Hayward, President of M.D. Health Plan, was recruited from California as an HMO career specialist. "It will take some time to differentiate M.D. Health Plan from other health care delivery systems. However, physicians will witness our quick start, our successful track record, our state-of-the-art structure," he said.

Hayward stated that M.D. Health Plan was being hurt by association with all of the recent negative press on HMOs in general. The media had sensationalized the "red ink" stories on HMOs, and the writers could not differentiate between start-up costs and operational losses. "We have tried to take the start-up success story of M.D. Health Plan to the media. We have met all of our projections in membership and income growth and we have kept expenditures well below estimates. Major employers, such as the State of Connecticut, the City of Bridgeport, and Electric Boat have offered M.D. Health Plan as an option. This is unique in the HMO industry (gaining early acceptance with large employers)."

When asked why M.D. Health Plan was able to gain early acceptance, Hayward stated that being a truly statewide HMO with member access to all 36 acute care hospitals played a large role. "There are a lot of HMOs claiming to be statewide and border-to-border. But if you check their hospital and physician access, it is very limited. After only six months of operations we have over 1,700 physicians and that number should grow tremendously when we make another stock offering this summer. After all who could be more physician-friendly than the HMO that they own entirely, M.D. Health Plan, and their own Society that sponsors it, CSMS?"

Mr. Hayward can be reached at M.D. Health Plan. (203) 776-5759.

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American Medical Association
Connecticut State Medical Society
  Councillor, Tolland County, 1976-1982
  Secretary 1982-1986
  Vice-President 1986-1987
  President-Elect 1987-1988
Fellow American Academy of Orthopedic Surgeons, 1967
American Orthopedic Society for Sports Medicine, 1976
American College of Sports Medicine, 1980
Eastern Orthopedic Association, Charter Member
Alpha Omega Alpha Honor Medical Society, 1956

Hospital Staff: Rockville General Hospital
  Chief of Staff, 1977-79
University of Connecticut—John Dempsey Hospital
Other Professional Activities:
Asst. Clinical Professor, Orthopedics
  University of Connecticut School of Medicine
Orthopedic Consultant,
  University of Connecticut Intercollegiate Athletics
Medical Consultant,
  Connecticut Interscholastic Athletic Conference
Chairman Committee on Medical Aspects of Sports
  Connecticut State Medical Society, 1974-1982
Editor, *Connecticut Sportsmed,* quarterly newsletter 1974-1982
Consultant VA Medical Center, Newington, Connecticut
Editorial Board, *Connecticut Medicine,* 1974-1981
Connecticut Advisory School Health Council, 1979-1982
Governor's Fitness Committee

Awards: Distinguished Service Award
  Connecticut Association of Athletic Directors, 1979
Distinguished Service Award
  National Interscholastic Athletic Administrators Association, 1980

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The President's Page

Diagnose and Treat: A Prescription for Failure

During the recent session of the General Assembly session, a bill to amend the scope of practice of physical therapists was raised in the Public Health Committee. The proposal (HB 5001, the Licensure of Health Care Professionals, Sec. 10) deleted sanctions against physical therapists who diagnosed and treated patients without referral from an authorized licensed practitioner; in other words, it would have allowed physical therapists to practice medicine.

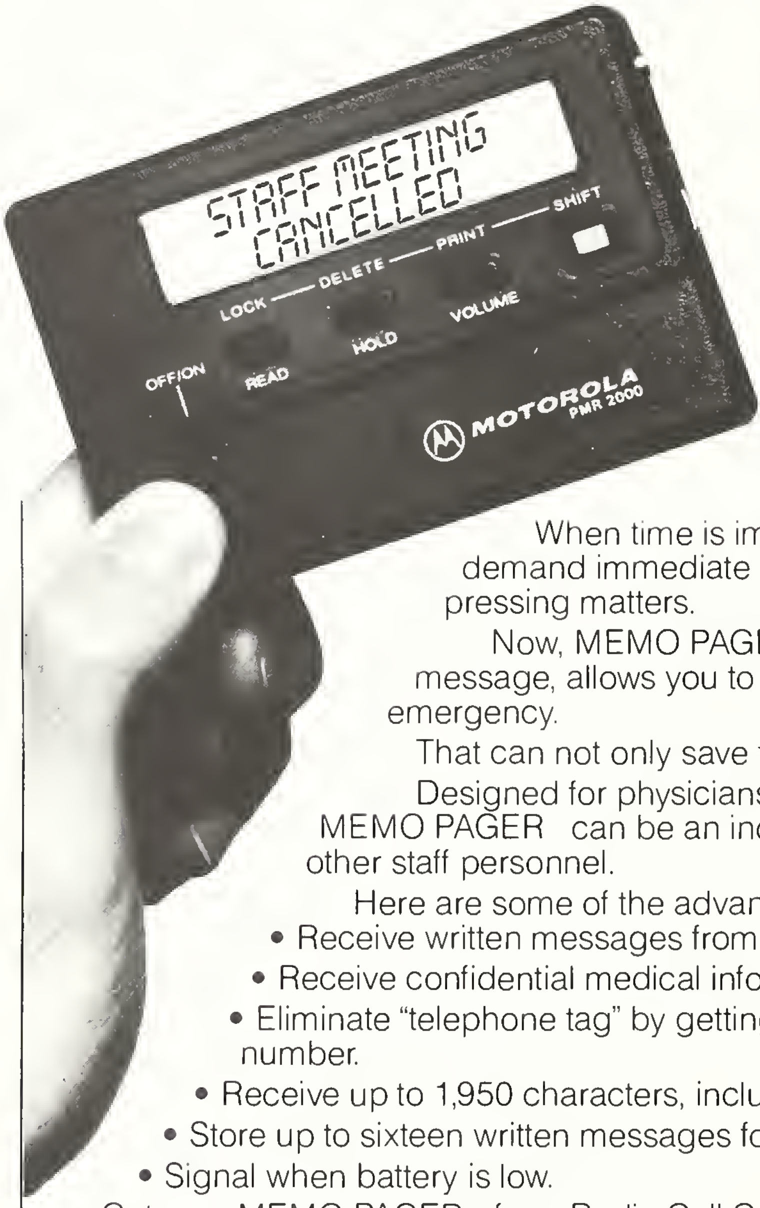
The arguments were that physical therapists had the training to diagnose and treat, had the ability to know when to refer, would save health care dollars, and were essentially already practicing medicine. To prove this last point, they produced prescriptions from physicians requesting diagnosis and treatment.

It was relatively easy to counter most of the arguments. Knowing first-hand the amount of medical input into the physical therapy program, we could point out that eight hours in the junior year in no way provided sufficient training to diagnose or even to recognize when to refer. As to cost containment, it was recognized that adding a layer of care would increase costs especially where therapists themselves controlled the number of modalities ordered. The difficult part to counteract was the prescriptions which said diagnose and treat. How does one explain to a group of legislators that a patient has already been screened for other possible causes of a backache before referral for therapy. The best way is to provide the diagnosis as well as the specific prescription for care. This should be the method of referral. Providing the specifics is your prerogative and the best way to be your patient's advocate.

The proposal was defeated in committee by a 10-6 vote. You can be certain, however, this request of the physical therapists will resurface. Fifteen states have already passed similar legislation. Physicians are looked upon as elitist, monopolistic, and unwilling to give up economic advantages in this fight. We must counter with the fact that this is a one-issue situation: quality of care. Historically, American medicine going back to the Flexner Report, and before, has carefully certified medical schools and reviewed post-graduate training programs to ensure this quality. This is only one area of many where we are now being challenged on an economic rather than a professional basis in our efforts to maintain quality of care for our patients.

The next legislative session in Connecticut will be a long and hard one for the medical profession. Make it a little easier for those of us who are trying to defend our position, and a lot better for your patients, by writing a specific diagnosis and treatment prescription when referring to a physical therapist.

Norman A. Zlotsky, M.D.,
President



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Reflections on Medicine

Setting Limits in Medical Education

ROBERT U. MASSEY, M.D.

Medical student indebtedness at graduation increased by 37% in constant dollars between 1981 and 1986. The national average in 1986 was $33,499, with almost 17% of students owing more than $50,000, and about the same number having no debt.

Medical educators have been uneasy about this growing problem for more than a decade, but at first we reassured ourselves that, defying economic laws, student debt would exert no effect on specialty choices. One college president suggested that it was a nonproblem:

"Where can you get such a deal? Invest a hundred thousand in return for a guaranteed annual income of that amount for 40 years! Never mind all the other advantages of being a doctor."

But of course the $100,000 is at interest and ends up being more than twice that amount by the time the loan is paid off; it looms even larger as it takes its place in with all the other burdens that come with getting a late start in life. That guaranteed income spoken of by the university president comes at the cost of 60 hour weeks, and more, in work whose demands on time, talent, and spiritual energy are virtually limitless.

According to a report recently published in the *Journal of Medical Education*[1] this increasing load of debt is apparently influencing what graduating medical students decide to do. The numbers of those choosing one of the primary care specialties declined from 46.3% in 1981 to 36.6% in 1986. Graduates planning to take research fellowships dropped from 24.4% to 20.1%. Another significant change was the drop in numbers of graduates who saw themselves practicing in small towns, from 23.8% in 1981 to 16.4% in 1986.

These data are drawn from too short a period to cause much excitement, yet those of us who talk with students every day know that the trends suggested here are continuing and perhaps accelerating. Anxiety about the future in a crowded profession is not relieved by worry about debt, nor is this burden likely to encourage the finest qualities of the good doctor.

Compared with our annual national health care bill the total indebtedness of graduating seniors represents probably no more than 0.15%, a week or so of inflation. Medical school tuitions, which total about 9 billion dollars, could be paid for by a 1.5% tax on dollars spent on medical care, but that is day-dreaming. Anyway, the university president's remark shows that we are unlikely to inspire much sympathy among our political masters on this issue.

Almost two years ago Paul Beeson[2] observed that, during a period when medical school entrants were declining (1981-1985), total salaried faculty numbers grew from 50,000 to 58,000, (61,000 in 1985-86). In 1958 the mean number of salaried faculty members per medical school was 121; in 1986, 480. "I think we have exceeded the right size in our medical schools," he wrote. By analogy with other complex systems, he suggested that increasing size disproportionately increased costs by reducing efficiency.

No dean or department head will eagerly undertake the task of shrinking his school or department, but 127 academic medical centers making policy together could accomplish not only that, but also undertake a parallel step in the national interest by reducing medical school entrants. Beeson suggests 5% each year for five years as a goal for both student and faculty numbers, but he links this suggestion with a strong plea for medical schools to rededicate themselves to their primary responsibility to educate medical students.

REFERENCES

1. Tudor C: Career plans and debt levels of graduating medical students. *J Med Ed* 1988;63:271-275.
2. Beeson PB: Making medicine a more attractive profession. *J Med Ed* 1987;62:116-125.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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LAW, MEDICINE AND PUBLIC POLICY

"It's Over, Debbie": Active Euthanasia and Public Policy

JOSEPH M. HEALEY, J.D.

Two events have recently focussed attention on the controversies generated by active euthanasia. The first involved an article which appeared in *JAMA*. A PIECE OF MY MIND is a regular feature of *JAMA* which rarely attracts public attention. Each column permits a contributor to describe issues facing medical practitioners. Earlier this year, one of these columns described a gynecology resident's use of morphine to precipitate the death of a 20-year-old patient with advanced ovarian cancer.[1] In the case, the resident who had had no apparent prior involvement with the patient was summoned in the middle of the night to the patient's bedside. Finding a patient suffering from the devastating effects of her disease, the doctor concluded that though he couldn't give the patient health, he could give her "rest." He injected 20 mg. of morphine sulfate intravenously and the patient died within four minutes. This description provoked widespread criticism of the journal for allowing such an article to be published, and of the anonymous physician for engaging in illegal and unethical active, involuntary euthanasia.[2] Some commentators have questioned whether the case described is a real one because of several details in the report which do not reflect current medical practice. Others have suggested that the case has the flavor of an experience 30 or 40 years old, now finally revealed by a senior physician. Regardless of the validity of the case *per se,* the article raises important issues about the extent to which active euthanasia remains an undesirable act which is and should be considered a crime.

In California, there is a proposed initiative entitled "The Humane and Dignified Death Act" which would permit active intervention to bring about the death of a terminally ill patient in certain circumstances. Promoted by Americans Against Human Suffering, the initiative allows a competent adult to execute a directive governing the withholding or withdrawal of life-sustaining procedures, the administration of "aid-in-dying," and the appointment of a surrogate to make decisions should the declarant become incompetent. The concept of "aid-in-dying" involves the administration of a medical procedure that will terminate the life of the terminally ill patient in a swift, painless, and humane manner. Those who implement the wishes of the patient would be immune from civil or criminal liability. This proposal is being circulated to obtain sufficient signatures to place it on the ballot in California this fall.

These two events have served to stimulate discussion about the boundaries of appropriate care at the end of life and the extent to which active euthanasia is, and should remain a crime. The concerns of opponents of active euthanasia are familiar to us. Actions by doctors intended to cause the death of a patient directly are viewed as always unnecessary, undesirable and unacceptable. They are unnecessary because there are always appropriate alternatives to reduce suffering and pain for the patient. They are undesirable because of the impossibility of establishing and administrating a fair and just system which would avoid abuse of the rights of patients. They are unacceptable because they place the doctor in the role of executioner and undermine judgment solely for the patient's health and well-being. In this framework, active euthanasia is murder which should not be permitted under any circumstances.

Some supporters of active euthanasia accept the concerns of the opponents, at least as far as they apply to involuntary, active euthanasia. However, they assert that voluntary euthanasia should be treated differently. In this context, voluntary euthanasia is a natural and appropriate extension of the right of self-determination which should allow the patient to determine the time and manner of death. Such a determination is viewed as especially appropriate in circumstances at the end of life when a patient is terminally ill or when there is no reasonable likelihood of recovery. For some, the distinctions between active euthanasia and passive euthanasia are not self-evident and there are times when active interventions are humane and compassionate responses to impossible situations. Still other supporters argue that there are situations when the interests of society or family members justify involuntary euthanasia for those with no prospects for regaining their prior level of functioning.

Discussion will continue in next month's column.

REFERENCES

1. It's over, Debbie. A PIECE OF MY MIND. *JAMA* 1988;259:272.
2. LETTERS. *JAMA* 1988;259:2094-2098.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

BOOK REVIEW

Current Medical Diagnosis and Treatment, 1987

Edited by Marcus A. Krupp, Steven A. Schroeder and Lawrence M. Tierney. Published by Appleton and Lange, Norwalk, CT and Los Altos, CA, 1987.

In the preface to this book it is mentioned that the intended audience includes internists, family physicians and other specialists, general surgeons, surgical specialists, obstetricians, gynecologists, students, house officers, nurses, and other health practitioners. Obviously, the intended audience is broad and so is the subject matter of this book. The information presented ranges from general care and disease prevention to the management of fluid and electrolyte disorders, and includes a short course in Mendelian genetics as well as various "how to" chapters on the management of poisoning; how to treat malignancies with antineoplastic agents; and how to treat the myriads of infections that can affect humankind. The preface mentions that the items that are new in this edition include the latest information on AIDS, current indications for MRI and CT, a new chapter on nutrition, a revised chapter on genetic disorders, and a revised chapter on general care and disease prevention. In this edition there are additional comments on chronic Epstein-Barr infection, a new section on angiodysplasia of the bowel, and major revisions of the chapter on immunologic disorders, with a new section on clinical organ transplantation, and updated drug information through August 1986. There is an appendix which is intended to aid in the interpretation of laboratory data, schedules of controlled drugs, nomograms, mortality tables, normal laboratory values, and a section on how to perform cardiopulmonary resuscitation. To wade through this volume is to wander through an encyclopedia. There is something for everyone but not everyone will need or want all of the material presented. The goal for such a text, it seems to me, is to serve as a synopsis for various clinical conditions in which it is possible to find a sort of check list of comparitive features, plus a list of references for more detailed information. This text can serve as a practical guide for quick and easy access to information for the practicing clinician, as well as a review for those who are studying for examinations. It is useful as a refresher or reminder for those who have known the material in the past, but it is not likely to be helpful as an introductory test for medical students.

As in any multiauthored text, the coverage is somewhat uneven. In the section on death and dying, for example, there is no mention of Hospice. Furthermore, pain management in the cancer patient is barely mentioned. The text is less than optimal with respect to antibiotics in that an important drug like imipenen-cilastin is barely mentioned, and the quinolones are not mentioned at all. Help with the use of third generation cephalosporins is very sketchy, and agents such as augmentin and timentin appear nowhere. With vancomycin and gentamicin, there is no recommendation to obtain drug levels to assure adequacy of treatment and to reduce the chances of toxicity.

Some of the specific recommendations as for malaria prophylaxis or the treatment of *Mycobacterium avium intracellulare* infections are not fully up-to-date. Many relatively uncommon conditions are mentioned. Some, such as amyloidosis, are treated with a short paragraph in one place in the text and a few more paragraphs in another place, without any references. On the other hand, primary pulmonary hypertension is given two full pages of print with six references. Chapters on antihypertensive agents would be of little help to the novice in selecting the right agent. Drugs that are currently seldom used such as guanethidine and rauwolfia are mentioned on equal terms with the most recent beta blockers and minoxidil. One section on cancer chemotherapy provides sufficient details so that the uninitiated might feel tempted to enter into the treatment of actual patients with these relatively dangerous drugs without the necessary background. If the physician had the expertise to treat patients with malignancies with chemotherapeutic agents, he probably would not be searching through a check list on the subject in *Current Medical Diagnosis and Treatment, 1987.*

On the other hand, chapters on the heart and great vessels, on blood, and on the gastrointestinal system are very good; and the chapters on endocrine disorders and diabetes are outstanding summaries. Throughout the text, there are many very helpful tables such as those that review the various syndromes associated with intestinal polyps, the differential features of parathyroid syndromes, the causes of osteomalacia, and the differential diagnosis disorders of mineral metabolism.

In a text such as this, the index is of crucial importance. To the limited extent that it was possible for me to check the index, a number of mistakes were found. For example, in the case of sarcoid, the principal write-up appears on page 156, but this is not listed at all in the index. Only other secondary references on the subject are cited, and one page citation was mentioned where there appeared to be no mention of sarcoid. In the case of AIDS/ARC, there were seven page citations in the index. Nevertheless, it was difficult to see where the major write-up on this subject appeared in the text. This occurred at page 821, but there was no bold print in the index to highlight this fact so that the major write-up could be found conveniently and quickly. On arriving at the principal discussion of AIDS/ARC, it was disappointing to find no mention of azidothymidine (AZT).

In the case of Lyme Disease, a brief write-up appeared under arthritis and musculoskeletal disease, as well as a somewhat longer one under infectious diseases, in the spirochaetal section. It would have been better to have cross referenced entries in various parts of the text so that there would be a single comprehensive write-up in the text.

Despite the limitations mentioned, this text of 1150 pages, with index, provides a ready source for a wealth of information for the practicing physician. The listed price of $32.50 seems reasonable for this comprehensive paperbound book. A sticker placed on the 1986 edition claiming "over a million copies sold" attests to the continuing popularity of this text. This is a text that should find its way to the shelf of most physicians.

David P. Johnson, M.D., F.A.C.P.
Middletown, CT

IN MEMORIAM

CALABRESI, MASSIMO, University of Florence, Italy, 1926. Dr. Calabresi was an internist in the New Haven County area since 1947. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died February 28, 1988 at the age of 84.

LIPTON, HAROLD, St. Louis University, 1932. Dr. Lipton was a pediatrician in the Hartford County area since 1945. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 9 April, 1988 at the age of 81.

LISCHNER, MOSES D., Yale University, 1930. Dr. Lischner was a pediatrician in the Hartford County area since 1931. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 8 March, 1988 at the age of 84.

MEO, RICHARD C., George Washington, 1934. Dr. Meo was a general practitioner in the New Haven County area since 1936. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 12 March, 1988 at the age of 79.

SCHWARTZ, HAROLD, University of Colorado, 1943. Dr. Schwartz was a radiologist in the Hartford County area since 1952. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 20 March, 1988 at the age of 70.

WALDEMAR-KERTESZ, JOHANNA, University of Vienna, 1926. Dr. Waldemar-Kertesz was a dermatologist in the New Haven Coounty area since 1943. She was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 18 March, 1988 at the age of 92.

Letter to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed $1\frac{1}{2}$ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

THE IMMORAL EQUIVALENT OF WAR

To the Editor: Lawyers proclaim, "If doctors practiced good medicine there would be no malpractice." So now the public believes that malpractice claims occur because doctors drink, abuse drugs, and are incompetent, lazy, and unkind. Doctors ought to deal with the burden which law has saddled onto medicine. In American courtrooms, the adversarial process assassinates character, and when allegations are proven wrong, complainants do not have to pay the legal costs, no deterrence prevails. Because of nuclear deterrence, there may never again be a World War, after WW II peace has lasted 43 years, and is continuing . . .

The American Bar Association has a new policy of Alternative Dispute Resolution (ADR—published Summer 1987 Issue No. 21) The new look is "resolution by consensus" and a start has been made to resolve contract disputes in government by administrative procedure. At long last it is being realized that merely the bloodlessness of court combat does not justify all those costs of time and money. But justifying the Contingent Fee here—which the rest of the world holds to be evil, champertous, and wrong—with the claim of "enabling the poor man to sue," is a thin veil of sanctity. The high profit potential of that fee system makes it operate the adversary system on the economy and mine insurance funds as income. It is the immoral equivalent of war; a trial is verbal combat. With no deterrent to litigation, any allegation is actionable.

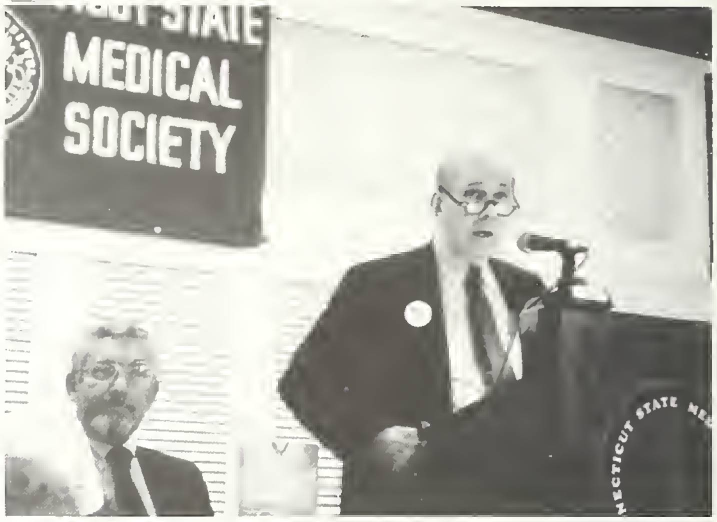
With technology, a vision of the coming end of war is shaping up, and a logical extension of this to the courts is to go from litigation to arbitration to mediation. War had best be banished from human imagination and expectancy. If the psychodrama of court combat were to give way to the technology of scientific fact-finding, we could lift judicial process out of its medieval makeup. Tiny differences escalate to bitter battles in court. Technology inhibits war today, it should also reform legal methods—the adversary way could well change to mediation.

Dispute resolution methods could start with the mediation of family disputes. Progress has eliminated physical force as a method of persuasion between parents and children, and between spouses. Mediation could reach satisfactory agreement and restore movement to logjammed lives. Not going to court should be the order for the future.

Sidney Vernon, M.D.
Willimantic, CT

1988 CSMS ANNUAL MEETING HIGHLIGHTS

Norman A. Zlotsky, M.D., the Society's 151st President, gives his inauguration address to the House of Delegates.

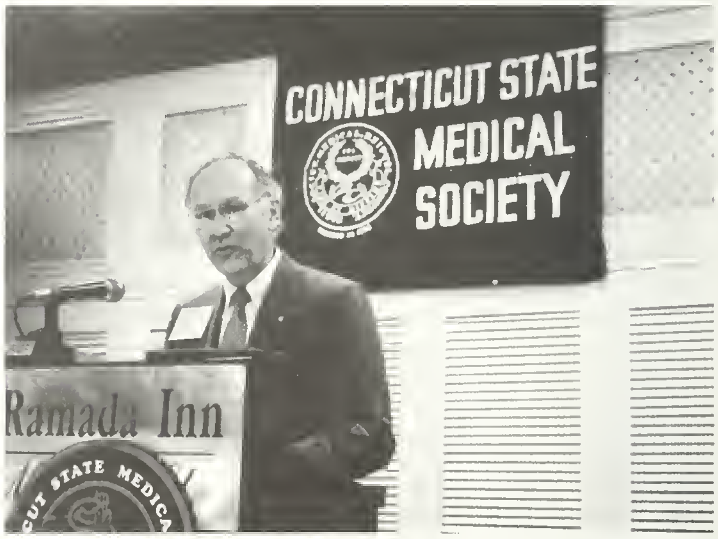


James P. Orphanos, M.D., Immediate Past President, reports on the year's activities, as Lawrence Ahrens, M.D., Speaker of the House, listens.

Guy W. VanSyckle, M.D., Danbury, Chairman of the Council, answers questions about his report.

James P. Orphanos, M.D. presents the fourth annual CSMS Connecticut Science Fair Award to John R. Facenda, West Haven, a student at Our Lady of Victory School. His parents are with him.

Mrs. Bobbie Czarsty, Auxiliary Chairperson of AMA-ERF, presents donations to Robert H. Gifford, M.D., Yale Medical School and to Milton Markowitz, M.D. of U-Conn School of Medicine.



Randolph P. Smoak, M.D., Secretary of the Board of the American Medical Political Action Committee, presents the AMPAC 3rd Place National Membership Award to COMPAC.

From the Executive Director's Office

SUMMARY OF PROCEEDINGS
CSMS HOUSE OF DELEGATES — ANNUAL MEETING
Meriden — May 4, 1988

Reports and Addresses

The House received reports, addresses and/or remarks from the President, Secretary, Treasurer, the Council, Delegates to the AMA, Chairman of the Board of Directors of COMPAC, the Executive Director, Connecticut Medical Management Inc. (CMMI), M.D. Health Plan, President of the Auxiliary to CSMS, Standing Committees, Representatives and Advisors, and the delegates from Massachusetts, Vermont and New Jersey. (The full text of the incoming president will appear at the end of this summary.)

Election of Officers and Others

The House voted to approve the published report of the Nominating Committee (the Council) with minor amendments. Officers elected were:

President: Norman A. Zlotsky, M.D., Rockville
President-Elect: Roger S. Beck, M.D., Wethersfield
Vice-President: Medhi S. Eslami, M.D., Waterbury
Secretary: Katherine C. Ill, M.D., New Britain
Treasurer: Robert R. McDonnell, M.D., New Haven
Speaker of the House of Delegates: Kenneth M. Robbins, M.D., Middletown
Vice Speaker of the House of Delegates: Sultan N. Ahamed, M.D., Norwich
Councilor-at-Large: James P. Orphanos, M.D., Greenwich

Delegates and Alternates to the American Medical Association as of 1/1/89:

Jerome K. Freedman, M.D., New Haven (D) 1/1/89 - 12/31/90
Jerome Bobruff, M.D., New London (A) 1/1/89 - 12/31/90
Joseph S. Sadowski, M.D., Hartford (D) 1/1/89 - 12/31/90
James P. Orphanos, M.D., Greenwich (A) 1/1/89 - 12/31/89
Stewart J. Petrie, M.D., Derby (D) 1/1/89 - 12/31/90
Robert M. Chmielewski, M.D., Bristol (A) 1/1/89 - 12/31/90
Edward A. Kamens, M.D., Fairfield (D) 1/1/88 - 12/31/89
Joseph C. Czarsty, M.D., Oakville (A) 1/1/88 - 12/31/89
Vincent A. Catrini, M.D., Middletown (D) 1/1/89 - 12/31/89
Annemarie S. Welch, M.D., New Britain (A) 1/1/88 - 12/31/89

Summary of Actions Taken

All items of business not calling for specific action by the House were accepted directly for filing. Items calling for action to be taken by the House of Delegates were heard by reference committees. Following is a list of the major actions taken:

Amendment to the Bylaws

Voted to approve the following amendment to the CSMS Bylaws which will go into effect on 1/1/89:

Subject: Amendment to the Bylaws Re Life Membership and Dues Reduction

Article IV - MEMBERSHIP
Section 4 - LIFE MEMBERSHIP AND DUES REDUCTION

Par. 1 — Upon request any Active Member of the Society may become a Life Member or receive a dues reduction under the following criteria:

(a) Physicians permanently disabled pay no dues.

(b) 70 years of age or older and fully retired (working 0 hours per week) pay no dues.

(c) 70 years of age or older working 20 hours or less per week will be required to pay one-half of the regular dues. (Physicians working more than 20 hours per week pay full dues.)

(d) Fully retired physicians not 70 or over will be required to pay 20 percent of the regular dues rate.

Par. 2 — Any member eligible for Life Membership under Paragraphs 1(a) or 1(b) may apply for such membership to the Executive Director of the Society and shall become a Life Member on approval of the Executive Director of such application. The Executive Director shall subsequently report this action to the Council. Life Members or Members whose dues have been reduced shall not be subject to any assessments and shall be accorded all the rights and privileges of Active Members in this Society including the right to vote and hold office. Life Membership or the reduction of dues provided for under the provisions of Pars. 1 and 2 shall become effective on January 1 of the year following eligibility for such status.

Par. 3 — Life Members who were exempt from payment of dues based on age and retirement under Bylaws applicable prior to 1989 shall be entitled to maintain their dues-exempt status in all subsequent years.

Connecticut Physicians Group Purchasing Plan, Inc.

Voted to approve the following resolution:

Subject: Resolution—Connecticut Physicians Group Purchasing Plan, Inc.

WHEREAS, CSMS will be the sole shareholder of Connecticut Physicians Group Purchasing Plan, Inc. ("CPGPP"); and

WHEREAS, From time to time, CSMS, as the shareholder, will be required or empowered to take certain actions; and

WHEREAS, CSMS wishes to define the mechanism by which it will exercise its rights as a shareholder efficiently; therefore be it

RESOLVED, That the rights and powers of CSMS as a shareholder of CPGPP shall be exercised by the Council of CSMS, and the Council is hereby authorized and empowered to act on behalf of CSMS with respect to all matters concerning CPGPP.

AIDS Policy

Voted to approve the following as the CSMS policy on AIDS:

In accordance with the Principles of Ethics of the American Medical Association, and guidelines promulgated during the past year from the Center for Disease Control of the U.S. Public Health Service, the CSMS encourages all members to provide diagnosis, treatment, and educational services to patients and/or the general public:

a. No patient should be denied services; if a physician is incapable by training or current practice to provide service, the patient must be assisted to find another practitioner or facility that can provide service.

b. Until such time as a vaccine or immunization for primary prevention is available, education is the main source for prevention. Physicians are urged to educate themselves and to provide education and risk behavior counseling to individual patients, and to groups as a community service to promote public health. Physicians are also urged to assess risk behavior.

c. Specific treatment for AIDS or ARC is currently limited, and may require consultation and/or referral to practitioners with expertise in infectious disease, immunology, and oncology. Counseling and other community resources for the care of patients with AIDS will require the coordination of social and other community resources. Physicians are urged to familiarize themselves with what is available in their communities.

d. Medical Ethics requires that patients not be refused treatment because of the nature of their illness.

IPA & MDEC/MDHP Nominees

In accordance with the IPA and MDEC/MDHP Bylaws, the Council/House of Delegates is requested to submit the names of eight physicians for the IPA Board and six physicians for the MDEC/MDHP Board. It was voted to approve the following names for appointment to the boards indicated:

CSMS-IPA Nominees

Mahmoud S. Okasha, M.D., Norwich (Psych)
Alfredo A. Arbulu, M.D., Enfield (Surg)
Shelby J. Galloway, M.D., New Haven (Rad)
Joseph C. Czarsty, M.D., Oakville (FP)
Beatrice S. Desper, M.D., Bristol (Ob/Gyn)
James P. Orphanos, M.D., Greenwich (FP)
Charles A. Shooks, M.D., Willimantic (IM)
Richard I. Stone, M.D., Bloomfield (IM)

MDEC/MDHP Nominees

Lawrence M. Blum, M.D., Fairfield (Derm)
James J. Brady, M.D., Hamden (Ob/Gyn)
James P. Orphanos, M.D., Greenwich (FP)
Stephen J. Leach, M.D., Willimantic (IM)
John J. Fote, M.D., West Hartford (Ped)
Norman E. Smith, Jr., M.D., Torrington (Ped)

Resolution on Medical Care

Voted to approve the following resolution:

WHEREAS, there has been increased utilization of allied health personnel in the provision of medical care; and

WHEREAS, the quality of medical care provided is directly tied to direct physician involvement; therefore be it

RESOLVED, that appropriate medical care requires that a responsible physician personally supervise the evaluation, diagnosis and management of patients with acute medical problems.

Mandatory Assignment

In order that the public be provided with full and complete information on the mandatory assignment issue it was Voted to approve the following resolution:

RESOLVED, that timely public statements be formulated and issued by the President of CSMS concerning mandatory assignment, the Society's Medical Courtesy Card Program and related matters, including who paid for the program and how much, who delayed implementation and how long, and other information needed for understanding these issues.

Awards

Dr. James Orphanos, President, and Mrs. Joseph Czarsty, Chairperson of AMA-ERF presented the following awards:

AMA-Education and Research Foundation (AMEF)

Yale University School of Medicine—$7,160.56

Robert H. Gifford, M.D., Associate Dean for Medical Education and Student Affairs accepted the check.

University of Connecticut School of Medicine—$4,568.75

Milton Markowitz, M.D., Associate Dean for Student Affairs accepted the check.

Connecticut Science Fair Awards

Dr. Orphanos presented the following:

First Place — Mr. Joseph P. Macary, Crosby High
Sr. Division School, Waterbury
Project: "How Much Smoke in a Cigarette"
First Place — Mr. John R. Facenda, Our Lady of
Jr. Division Victory High School, West Haven
Project: "And So It Grows"

Each student received a suitably inscribed placque and a check for $200.00.

Proposed Amendments to the Bylaws

The following amendments to the Bylaws were placed on the table for action at the next regular meeting of the House of Delegates.

Subject: Quorum

Introduced by the Council

(To be placed on the table for action at the next regular meeting of the House of Delegates)

Purpose: To reduce the size of the quorum

Recommendation: Replace Section 11, Article V-HOUSE OF DELEGATES, with the following amendment:

Article V - HOUSE OF DELEGATES
Section 11 - QUORUM (Change in Capitals)

A quorum, TO CALL TO ORDER, any meeting of the House of Delegates shall consist of a majority of the sum of the number of delegates eligible to vote in the House. ONCE THE MEETING HAS BEEN CALLED TO ORDER, A QUORUM SHALL CONSIST OF FIFTY PERCENT OF THE TOTAL DELEGATES REGISTERED.

Subject: Hospital Medical Staff Section

Introduced by the Council

(To be placed on the table for action at the next regular meeting of the House of Delegates)

Purpose: Establishing a CSMS Hospital Medical Staff Section (Additional words in capital letters and bold)

Article V - HOUSE OF DELEGATES
Section 2 — COMPOSITION

The House of Delegates shall be composed of: (a) delegates elected by the component association according to the apportionment provided in Section 4 of Article V of these Bylaws; (b) those members of the Council who are eligible to vote in the Council; (c) all past presidents of The Society and such other members of the Society in good standing as may be approved by the House of Delegates, from time to time, who shall be ex officio members of the House of Delegates without the privilege of voting; (d) delegates elected by the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** according to the apportionment provided in Article V, Section 4 of these Bylaws.

Section 4, Apportionment, Par. 2

The number of delegates from the Student Members shall be one delegate and one alternate from each medical school in the state. The Postgraduate Physician Members shall be entitled to send from their constituent membership to the House of Delegates each year one delegate for every seventy, or fraction thereof, of the number of members as recorded in the office of the Executive Director of the Society on December 31 of the immediately preceding year. **THE CSMS HOSPITAL MEDICAL STAFF SECTION SHALL BE ENTITLED TO SEND ONE DELEGATE AND ONE ALTERNATE.**

Section 5, Registration, Par. 1

Before every session of the House of Delegates, the Student Members and Postgraduate Physician Members and **THE HOSPITAL MEDICAL STAFF SECTION** shall deposit with the Secretary of the Society a certificate or list signed by the president, secretary, or duly authorized representative of the Student Members and the Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION,** respectively, or the Executive Director of the Society, listing those members entitled to be seated in the House of Delegates.

Section 5, Registration, Par. 3

When an elected delegate or the elected alternate from the Student Members or Postgraduate Physician Members **OR THE HOSPITAL MEDICAL STAFF SECTION** is unable to attend a specified session, the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** may appoint a substitute delegate and alternate delegate.

Section 12, Procedure, Par. 3(b)

Component county associations or the Student Member or Postgraduate Physician Member associations **OR THE HOSPITAL MEDICAL STAFF SECTION** whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.

Article XV - Associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS**
Section 1 - Definition

The Council shall sanction associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS.** These Associations shall meet between forty-five and sixty days prior to the annual meeting of the House of Delegates of the Society for the purpose of election of officers and delegates to the Society and at such other times as they deem necessary.

Section 2, Bylaws

The Student Member and Postgraduate Physician Member **AND HOSPITAL MEDICAL STAFF** associations shall have the power to adopt bylaws that are not in conflict with the bylaws of the Society. In the event of an existing or apparent conflict, the Bylaws of the Society shall take precedence.

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Inaugural Address of the Incoming President

Annual Meeting — House of Delegates

May 4, 1988

NORMAN A. ZLOTSKY, M.D.

Mr. Speaker, Members of the House of Delegates, and guests: As your incoming President at this 196th annual meeting, I am singularly honored today. I approach this year in awe of the Connecticut State Medical Society's historic endurance and with deep concern for the responsibility of steering statewide organized medicine through the continuing revolution in medical practice. My concern for our ability to provide optimal care for our patients has led me here today. Those of you with the same concerns have spent long days and nights working with your patients, then have travelled significant distances to attend committee meetings in support of the Connecticut State Medical Society. In my case, my wife, Judy, has made this possible with her personal support and ability to keep home and family running smoothly with little help from me.

How does one get involved in organized medicine? I will continue a precedent started by Jim Orphanos, in explaining how this came about. I became involved by writing a letter in 1973 to Guy Van Syckle, chairman of the council, perceiving a need for a more organized approach to sports medicine activities in Connecticut. I recommended the formation of a standing committee of the Connecticut State Medical Society on the medical aspects of sports and outlined what I felt should be the charge to the committee. Guy, being the intrepid motivator he is, had a committee in place at the next annual meeting of the House of Delegates and I was appointed its first chairman. I was chairman of the Sports Medicine Committee for its first eight years and learned what organized medicine can accomplish. Our committee developed a quarterly newsletter, Connecticut Sportsmed, highly sought after by those who coach and treat athletes in Connecticut, three to four educational symposia a year aimed at prevention and early care of sports related injuries, consultative support for the Connecticut Interscholastic Athletic Conference, and published guidelines for an optimal sports medicine program in the public schools approved by the State Department of Education. These accomplishments sold me on organized medicine's ability to achieve results by physicians working together. Prior to this experience, I had been in the same category as most physicians passing through American medical academia. In my days in medical school and in training, organized medicine was at best tolerated as a club, at worst considered a reactionary group out of the mainstream. I still remember a Herblock cartoon in 1964 as a young orthopedist just out of training that showed a physician labeled AMA leadership vigorously trying to stop Congress from passing the Medicare bill and was labeled—"It looks like rigor mentis." We have fortunately reached beyond that era with a genuine effort to involve students and postgraduates in the process of organized medicine. In these revolutionary days we must stand united, and I know of no better way than to bring young physicians into our society early. Our student and resident sections are active and growing. They have swelled our ranks so that we have the numbers for an extra AMA delegate this year. I hope to support these groups so that they continue to grow and prosper.

While my earliest activities were with the sports medicine committee, I became exposed to the general concerns of organized medicine through the CSMS Council and the House of Delegates. Over the past 12 years the major issues have evolved around three areas: (1) Our litigious society and its effect on liability insurance in general and medical liability insurance in particular. (2) The federal and state governments turning medicine from a profession to a business. It started with the Federal Trade Commission suit and continues to the very recent medicare assignment activity and incursion of limited licensed practitioners into the practice of medicine; (3) Third party payers recognizing potential profits in an industry that has grown from eight to over 11% of the gross national product during this time. I will discuss some present highlights in each of these areas with an emphasis on that elusive element, unity of action, which physicians as strong individual thinkers have great difficulty accommodating to. The older physicians among us, myself included, lived through the end stages of the physician as superstar with the ability to change unproductive ideas with individual ethics. To best provide care for our patients and be their strong advocates will require a new collegial singleness of purpose. How well we balance our own interests with those of our patients will be carefully monitored by those around us, especially those who would contain costs by providing less access and poorer quality of care. We must come out on the right side of the ledger.

Tort reform is a continuing saga of various initiatives affecting how much we must charge our patients to cover medical liability insurance premiums. This is the easiest area to unify our efforts. Our 1986 tort reform bill supported by city and town governments, business and other professions was highly successful. It produced a full platter of changes including recognizing collateral sources,

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NORMAN A. ZLOTSKY, M.D., incoming President of the Connecticut State Medical Society is in the private practice of orthopaedics, Rockville, CT, and is Assistant Clinical Professor of orthopaedic surgery, University of Connecticut School of Medicine.

changed joint and several liability to the actual percentage liability, gave some control of contingency fees, structured verdicts to allow payout over time, gave better definition of expert witnesses, and discouraged frivolous suits. The final provision of the bill, however, for a study of noneconomic damages by a task force of the judiciary committee had reverse consequences for us. Not only was a cap not ultimately considered, but a recommendation for a reversal of the joint and several liability changes made in 1986 was passed in 1987 restoring the deep-pocket provisions for noneconomic damages. This was not an unexpected effort from a judicial committee made up of two-thirds attorneys and emphasizes our need for constant vigilance. It is interesting to note that several attorney members of the Judicial Committee when questioned about the large number of lawyers on the committee responded that the law was complicated and legal knowledge was needed. By contrast and typical of other legislative committees, there is one teacher on the education committee, one naturopath and two nurses on the public health committee. We also struggle under the tort system where six laymen are supposed to be perfectly capable of determining the medical complexities of a malpractice case. How can we progress with tort reform from this point? I believe we have a new opportunity to reconsider some type of arbitration panel of knowledgeable individuals as well as a cap on noneconomic damages. The recent federal recommendations for tort reform by health and human services through Secretary Bowan includes both these recommendations and gives us this new impetus. I plan to send educational material to our legislators during the remainder of this year and hope to introduce new legislation in next year's long session. This could require extensive research regarding the constitutionality of such legislation in Connecticut, but I feel it is worth the effort. Attorney William Davis, the eminent trial attorney, spoke at a Tolland County Medical Society meeting recently. One of his statments was how lucky we were to be in Connecticut instead of California with its greater incidence of tort cases. The fact, however, is my orthopedic friends in California pay one half the malpractice premium I do because of a ten-year-old effective cap on noneconomic damages which has been upheld by the California Supreme Court. We need to pass a cap on noneconomic damages on all tort cases which will ensure the needed competition from other insurance companies so that they can actuarially predict their losses and stay in the market to compete with our excellent CMIC.

Government incursion into medicine is a more varied and less controllable problem. We are enjoined from stating what we feel is ethically so by the Federal Trade Commission. A recent case in point is the podiatry board given permission by the Attorney General's Office in the state of Connecticut to decide on whether podiatrists may treat the ankle. Despite the clear language of the Podiatry Licensing Law stating podiatrists may treat only the foot, the Podiatry Board predictably ruled that "the ankle is part of the foot," and approved podiatric care for the ankle. Our Society through legal counsel requested an injunction which was initially denied. We had to pursue this to the Connecticut State Supreme Court to prove we had an economic interest to validate our petition. Once referred back to the Superior Court and after two years of arguments on economic issues ultimately going in our favor, the merits of the case were quickly settled also in our favor. The ankle is clearly not the foot in medicine or in law. We now are back to a Supreme Court review of the technical aspects of the case. These are the muddy waters in which we are striving to maintain medicine as a profession. Other limited licensed professionals have sought incremental extension of their practices in this session. Physical therapists want to practice medicine by being allowed to diagnose and treat without referral. This amendment was defeated in committee by convincing legislators therapists did not have the training and experience to function at that level. Nurse practitioners asked for the ability to write prescriptions. Their requests were dropped for technical considerations. I'm certain both requests will turn up as bills in the next legislature and the podiatrists will also seek legislative change if our suit is upheld in the Supreme Court. I believe physicians must become more active and recognize time must be spent to sway legislators as well as money to support COMPAC. I plan to convene a president's conference in the fall and pinpoint interested physicians who can develop position papers in each of our expected problem areas as well as being available for public hearings, legislative lobbying at the Capitol and at home. Being ready instead of reacting will benefit us all. I believe the more active sections can be brought into the mainstream of CSMS activity with this approach. I hope to make the orthopedic section a model. This in no way negates the tremendous efforts of our legislative committee and lobbyists. They frequently must react to crises. They have the political knowledge. The addition of numbers of physicians with medical knowledge who can be directed by our lobbyists and committee should greatly enhance our efforts.

The final issue I want to discuss is most explosive and will take the greatest amount of unity. We are being squeezed from many directions by third party payers who recognize the large size of the health care pie and want to make a profit where previously there was none. We thus have giant corporations as well as small entrepreneurs who are betting they can limit access or quantity of care enough to make a profit. We are being told these changes will not effect quality. If we accept these proposals, however, we either lose control of professional decisions or we are put in the ethically untenable position of deciding how much care to provide and by whom. Physicians' response by formation of local IPA's to decide on how to deal with these situations has been excellent so long as professional rather than economic considerations were paramount in making decisions. If we are perceived as reversing these priorities we will no longer be seen as advocates for our patients but as business people making business decisions. A case in point is MD Health Plan. The House of Delegates seeing the evolution of this problem empowered a committee to develop a physician owned plan which would be sensitive to patient needs as well as remunerating physicians in an acceptable manner. Against daunting odds, the HMO is operational and looking for ways to develop. Our growth is ahead of schedule and our marketers are hard at work to continue this expansion. We need a further influx of physicians to fuel this growth in pockets of underserved areas. There are, for example, 1,000 physicians who joined the IPA but did not buy stock. There are many others who held back because of local considerations where certain HMO's, PPO's or other health conglomerates were favored over the rest. I believe MD Health Plan is the only HMO which will consider physician needs in the long run. We presently are developing an alternative offering to help us capitalize and enlarge the IPA. It should be available on July 1. We must obtain your help as the leaders who voted MD Health Plan into being to explain this need and to unite with us by joining the plan and ensuring its success. I believe this is both an intellectual and an emotional issue. For those who believe in the plan, we will have several ways of joining. For those who feel it is not good business to join, we need an emotional commitment to professional unity. We hope to make believers of all who join for whatever reason in time. My message is unity in the face of all the pressures on us to put business before profession and not defend our patients' rights to quality care.

Finally, I have witnessed another change in the past ten years, the enlarged administrative staff in the large counties. Their enhanced ability has led to great initiatives as the courtesy card program and many local benefits for their physicians. If we can avoid negative local perceptions with open dialogue and interaction with the Council and House of Delegates, we can add another dimension of support for organized medicine. In the end each individual physician must be in touch with facts. If the options are clear, I expect most physicians will make the right decision. As the leaders of organized medicine in Connecticut, we ask for your help to spread the word and unite us, and to succeed in continuing to provide the best care for our patients.

Thank you.

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50 Years Ago
From the *Journal of the Connecticut State Medical Society*
June 1938

"THE BIRTH OF A BABY" HAS ITS FIRST PUBLIC SHOWING

The first public showing in the United States was made in Minneapolis where it recently finished a run of three weeks. It was witnessed by 85,524 individuals. As the majority of those who saw it were between fifteen and forty-five years of age, it apparently reached one-third the population of Minneapolis in this age group. We quote from Minnesota Medicine, April 1938: "The audiences in Minneapolis reacted in a wholesome fashion. Sensation seekers were disappointed, as the film is not a sex picture. There was no age limit at the box office which enabled families to come together. High school students were admitted without question as sex is developing during this age period. Many parents wisely concluded that it was better for their children to get reliable information in a much better way than they were able to give it. If the children seemed too young, they were called to learn their wishes in the matter. During the entire three weeks' exhibition of the picture, no complaints were received. On the contrary, many people went out of their way to thank those responsible for its production."

GERIATRICS AS A MODERN SPECIALTY

This is the subject of a paper recently published in the Texas State Journal of Medicine and condensed for the March, 1938, issue of Digest of Treatment. Geriatrics is said to be the modern challenge to the medical profession since the problems of senescence lend themselves quite well to specialization. The author encourages his readers to persuade men and women to take it easy as they approach the sixth decade of life. Relaxation from that eternal drive will avoid premature senescence.

A CAUSE FOR PRIDE

The infant mortality death rate for 1937 in Connecticut was 40.5 per 1,000 living births. In 1901 the same death rate was 138. The number of maternal deaths for 1937 in Connecticut was 65; in 1936 it was 102. The first two months of 1938 show fewer maternal deaths than in the corresponding period for 1937.

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Manuscripts should be submitted to **Robert U. Massey, M.D., Editor, CONNECTICUT MEDICINE,** 160 St. Ronan St., New Haven, CT. 06511, **in original and one duplicate copy.** The author should retain another copy for his records. A covering letter should identify the person (with the address and telephone number) responsible for negotiations concerning the manuscript; the letter should make it clear that the final manuscript has been seen and approved by all authors.

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Copy must be typewritten double-spaced on (8½ x 11-inch) heavyduty, white, bond paper. This requirement applies to all text elements: references, legends, footnotes, and others. Allow generous margins on each page — at least 1½ inches at top, bottom, and left, and 1 inch at right. Pages should be numbered consecutively.

Titles and Authors' Names

The first page of the manuscript should include (A) title of paper; (titles should be short, specific, clear, and amenable to indexing. A subtitle is frequently useful in keeping the main title short); (B) name of author(s), including first name(s) and with academic degree(s); (C) List hospital positions for each author and any institutional or other credits. If an author's present affiliation is different from the affiliation under which the work was done, both should be given.

Addenda and appendices are usually not acceptable. If additional data become available before manuscript submission or final author approval, this material should be incorporated into the text.

Abstracts

The second page should contain an abstract of not more than 150 words. This abstract should be factual, not descriptive, and should present the reason for the study, the main findings (give specific data if possible), and the principal conclusions. Do not include a summary.

References

The following minimum data should be typed double-spaced: names of all authors, complete title of the article cited, name of journal abbreviated according to *Index Medicus,* year of publication, volume number, and first and last page numbers. All references must be cited in the text. They should be arranged according to the order of citation, and not alphabetically. All references must be numbered consecutively. Numbered references to personal communications, unpublished data and "in preparation" are unacceptable. If absolutely essential, such material may be incorporated in the appropriate place in the text or as a footnote. Sample references are as follows:

1. Jones J: Necrotizing *Candida* esophagitis. *JAMA* 1980; 244:2190-2191.
2. Kremer H, Kellner E, Schierl W, et al: Ultrasonic diagnosis in infiltrative gastrointestinal diseases. Dtsch Med Wochenschr 1978;103 (June 9): 965-966. Abstracted, *JAMA* 1978;240:2784.
3. Influenza vaccine — recommendations of the Public Health Service Advisory Committee on Immunization Practices. *MMWR* 1979;28:231-238.
4. Fischer DH: *Growing Old in America.* New York, Oxford University Press, 1977, pp 210-216.

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Data presented in tables should be self-explanatory and should supplement, not duplicate, the text or figures. Excessive tabular data are discouraged. Each table should be typed double spaced, including all headings, on separate sheets of 8½ x 11-inch paper. Oversize paper should not be used. Instead, repeat heads and stubs on a second sheet for tables requiring extra width. Number tables consecutively with respect to citation in the text. Each table must have a title.

Illustrations

Figures should be professionally drawn and photographed, if possible. Glossy, clear black and white photographs should be submitted.

Line drawings, graphs and charts should be done in India ink on high-grade white drawing paper. Lines should be examined for evenness, breaks, and proper alignment. Lettering and symbols should be clear and of even density throughout. Symbols, lettering, and numbering should be of such proportioned size that when the figure is reduced to *Journal* column width (8 cm) each item will still be distinctly recognizable.

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Drug Names

Generic names should, in general, be used. If an author so desires, brand names may be inserted (parenthetically).

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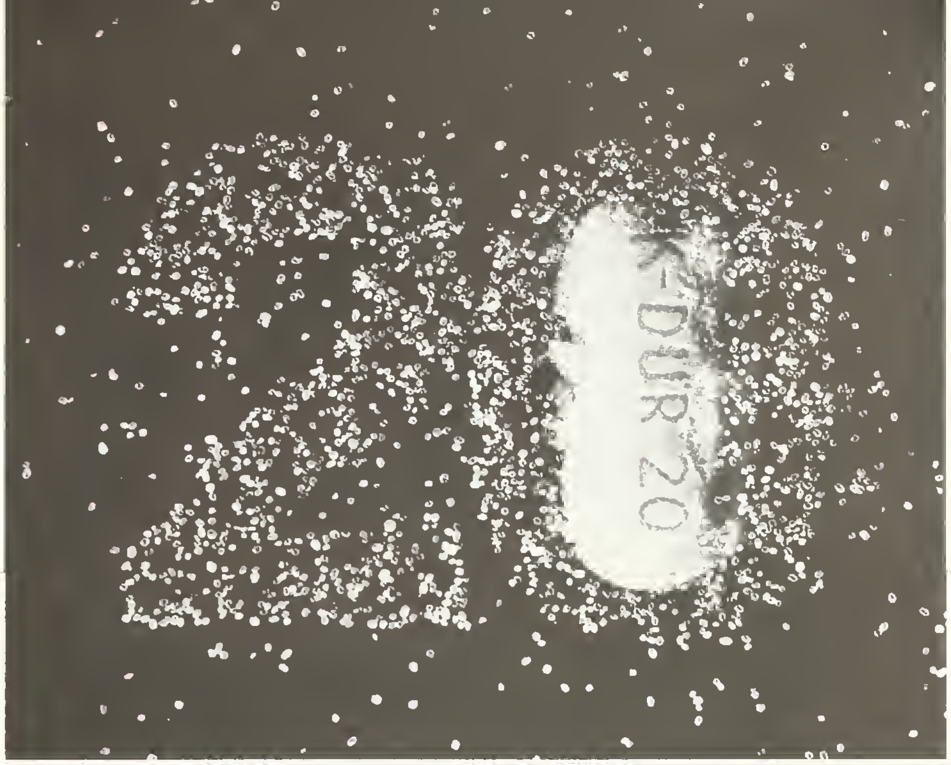

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2. For the prevention of potassium depletion when the dietary intake is inadequate in the following conditions: Patients receiving digitalis and diuretics for congestive heart failure, hepatic cirrhosis with ascites, states of aldosterone excess with normal renal function, potassium-losing nephropathy, and with certain diarrheal states.

3. The use of potassium salts in patients receiving diuretics for uncomplicated essential hypertension is often unnecessary when such patients have a normal dietary pattern. Serum potassium should be checked periodically, however, and if hypokalemia occurs, dietary supplementation with potassium-containing foods may be adequate to control milder cases. In more severe cases supplementation with potassium salts may be indicated.

CONTRAINDICATIONS: Potassium supplements are contraindicated in patients with hyperkalemia since a further increase in serum potassium concentration in such patients can produce cardiac arrest. Hyperkalemia may complicate any of the following conditions: Chronic renal failure, systemic acidosis such as diabetic acidosis, acute dehydration, extensive tissue breakdown as in severe burns, adrenal insufficiency, or the administration of a potassium-sparing diuretic (e.g., spironolactone, triamterene).

Wax-matrix potassium chloride preparations have produced esophageal ulceration in certain cardiac patients with esophageal compression due to enlarged left atrium.

All solid dosage forms of potassium chloride supplements are contraindicated in any patient in whom there is cause for arrest or delay in tablet passage through the gastrointestinal tract. In these instances, potassium supplementation should be with a liquid preparation.

WARNINGS: Hyperkalemia—In patients with impaired mechanisms for excreting potassium, the administration of potassium salts can produce hyperkalemia and cardiac arrest. This occurs most commonly in patients given potassium by the intravenous route but may also occur in patients given potassium orally. Potentially fatal hyperkalemia can develop rapidly and be asymptomatic. The use of potassium salts in patients with chronic renal disease, or any other condition which impairs potassium excretion, requires particularly careful monitoring of the serum potassium concentration and appropriate dosage adjustment.

Interaction with Potassium Sparing Diuretics—Hypokalemia should not be treated by the concomitant administration of potassium salts and a potassium-sparing diuretic (e.g., spironolactone or triamterene) since the simultaneous administration of these agents can produce severe hyperkalemia.

Gastrointestinal Lesions—Potassium chloride tablets have produced stenotic and/or ulcerative lesions of the small bowel and deaths. These lesions are caused by a high localized concentration of potassium ion in the region of a rapidly dissolving tablet, which injures the bowel wall and thereby produces obstruction, hemorrhage or perforation.

K-DUR tablets contain micro-crystalloids which disperse upon disintegration of the tablet. These micro-crystalloids are formulated to provide a controlled release of potassium chloride. The dispersibility of the micro-crystalloids and the controlled release of ions from them are intended to minimize the possibility of a high local concentration near the gastrointestinal mucosa and the ability of the KCl to cause stenosis or ulceration. Other means of accomplishing this (e.g., incorporation of potassium chloride into a wax matrix) have reduced the frequency of such lesions to less than one per 100,000 patient years (compared to 40–50 per 100,000 patient years with enteric-coated potassium chloride) but have not eliminated them. The frequency of GI lesions with K-DUR tablets is, at present, unknown. K-DUR tablets should be discontinued immediately and the possibility of bowel obstruction or perforation considered if severe vomiting, abdominal pain, distention, or gastrointestinal bleeding occurs.

Metabolic Acidosis—Hypokalemia in patients with metabolic acidosis should be treated with an alkalinizing potassium salt such as potassium bicarbonate, potassium citrate, potassium acetate, or potassium gluconate.

PRECAUTIONS: The diagnosis of potassium depletion is ordinarily made by demonstrating hypokalemia in a patient with a clinical history suggesting some cause for potassium depletion. In interpreting the serum potassium level, the physician should bear in mind that acute alkalosis per se can produce hypokalemia in the absence of a deficit in total body potassium while acute acidosis per se can increase the serum potassium concentration into the normal range even in the presence of a reduced total body potassium. The treatment of potassium depletion, particularly in the presence of cardiac disease, renal disease, or acidosis requires careful attention to acid-base balance and appropriate monitoring of serum electrolytes, the electrocardiogram, and the clinical status of the patient.

Laboratory Tests: Regular serum potassium determinations are recommended. In addition, during the treatment of potassium depletion, careful attention should be paid to acid-base balance, other serum electrolyte levels, the electrocardiogram, and the clinical status of the patient, particularly in the presence of cardiac disease, renal disease, or acidosis.

Drug Interactions: Potassium-sparing diuretics; see **WARNINGS.**

Carcinogenesis, Mutagenesis, Impairment of Fertility: Long-term carcinogenicity studies in animals have not been performed.

Pregnancy Category C: Animal reproduction studies have not been conducted with K-DUR. It is also not known whether K-DUR can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. K-DUR should be given to a pregnant woman only if clearly needed.

Nursing Mothers: The normal potassium ion content of human milk is about 13 mEq per liter. Since oral potassium becomes part of the body potassium pool, so long as body potassium is not excessive, the contribution of potassium chloride supplementation should have little or no effect on the level in human milk.

Pediatric Use: Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: One of the most severe adverse effects is hyperkalemia (see **CONTRAINDICATIONS, WARNINGS,** and **OVERDOSAGE**). There have also been reports of upper and lower gastrointestinal conditions including obstruction, bleeding, ulceration, and perforation (see **CONTRAINDICATIONS** and **WARNINGS**); other factors known to be associated with such conditions were present in many of these patients.

The most common adverse reactions to oral potassium salts are nausea, vomiting, abdominal discomfort, and diarrhea. These symptoms are due to irritation of the gastrointestinal tract and are best managed by taking the dose with meals or reducing the dose.

Skin rash has been reported rarely.

OVERDOSAGE: The administration of oral potassium salts to persons with normal excretory mechanisms for potassium rarely causes serious hyperkalemia. However, if excretory mechanisms are impaired or if potassium is administered too rapidly intravenously, potentially fatal hyperkalemia can result (see **CONTRAINDICATIONS** and **WARNINGS**). It is important to recognize that hyperkalemia is usually asymptomatic and may be manifested only by an increased serum potassium concentration and characteristic electrocardiographic changes (peaking of T-waves, loss of P-waves, depression of S-T segment, and prolongation of the QT-interval). Late manifestations include muscle-paralysis and cardiovascular collapse from cardiac arrest.

Treatment measures for hyperkalemia include the following:

1. Elimination of foods and medications containing potassium and of potassium-sparing diuretics.
2. Intravenous administration of 300 to 500 ml/hr of 10% dextrose solution containing 10–20 units of insulin per 1,000 ml.
3. Correction of acidosis, if present, with intravenous sodium bicarbonate.
4 Use of exchange resins, hemodialysis, or peritoneal dialysis.

In treating hyperkalemia, it should be recalled that in patients who have been stabilized on digitalis, too rapid a lowering of the serum potassium concentration can produce digitalis toxicity.

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Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

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Part-time physician needed for sexually transmitted clinics and international travel clinics at the New Haven Health Department. Call the Medical Director at 787-8184 or send resume to the New Haven Health Department, c/o Medical Director, One State St., New Haven, CT 06511.

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Coastal Connecticut—BC/BE Pediatrician to join busy two-person practice in beautiful shoreline community. University affiliated hospital nearby. Excellent salary, production bonus, early partnership. Available July. Send CV to CSMS, c/o PED/OE.

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FAMILY PRACTICE

March '89. Age 29. Nat'l bds. AB elig. DO, NY College of Osteopathic Medicine, NY; Int., Metropolitan-Springfield, Springfield, PA; Res., Temple University Hospital, Philadelphia, PA. Prefers group practice in a medium-sized community. Write, Bruce Willner, M.D., 37 Gelding Lane, Horsham, PA 19044.

Dec. '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC (Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

March '88. Age 74. Licensed in Connecticut. Nat'l bds. AB cert. MD, State University of New York; Int., Brooklyn Hospital, Brooklyn, NY; Res., Post-Graduate Hospital and Mt. Sinai Hospital, New York, NY (Surgery); Fellowship, Bowen-Brook Fellow in Surgery. NY Academy of Medicine. Has experience in malpractice claims review. Prefers group, associate, institutional or industrial type practice. Write, M. Judson Mackby, M.D., 82 Saunders Lane, Ridgefield, CT 06877.

March '89. Age 29. Nat'l bds. AB elig. DO, NY College of Osteopathic Medicine, NY; Int., Metropolitan-Springfield, PA; Res., Temple University Hospital, Philadelphia, PA. Prefers group practice in a medium-sized community. Write, Bruce Willner, M.D., 37 Gelding Lane, Horsham, PA 19044.

GENERAL SURGERY

July '88. Age 33. Nat'l bds. AB elig. MD, Hanneman University, Philadelphia, PA; Int. and Res., University of Massachusetts Medical Center, Worcester, MA. Prefers group or institutional type practice. Write, Andrea Resciniti, M.D., 4 Duncannon Ave., Apt. #9, Worcester, MA 01604.

INTERNAL MEDICINE

Sept. '88. Age 32. Presently in practice. Nat'l bds. AB cert. MD, University of Himachal, India; Int. and Res., Wayne State University, Detroit, MI. Prefers group or associate type practice. Write, CSMS, c/o HSM/IM.

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Feb. '88. Age 47. Licensed in Connecticut. Presently in practice. Nat'l bds. AB elig. MD, Osmania Medical College Osmania University, Hyderabad, Andhra, India; Int., Osmania General Hospital, Hyderabad; Res., Gandhi Hospital, Secunderabad, India and Jewish Memorial Hospital, Manchester, England; Res., Gandhi Secunderabad and Queen's Park Hospital and St. Thomas' Hospital, England. Prefers part time positions including consultations in solo or institutional type practices. Write, Naimetulla A. Syed, M.D., Fairfield Hills Hospital, Newtown, CT 06470.

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Characteristics of Patients Admitted to a Newly Established Mental Health Center Crisis Unit

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ABSTRACT—Characteristics of 202 patients admitted, particularly repeatedly, to the Connecticut Mental Health Center (CMHC) Crisis Unit are described. The four-bed new Crisis Unit with a five-day stay was designed to supplement and provide more rapid access to existing CMHC care modalities for chronically ill, disadvantaged patients.

Crisis Unit patient characteristics were that they were relatively young (mean age 34), and had an average of six-year treatment histories. Though about half were admitted involuntarily, 60% were able to be discharged to aftercare without additional hospitalization.

Five percent were readmitted to the Crisis Unit during the study. They differed from those not readmitted in that they had fewer housing and social supports, though they were more compliant with treatment.

Similar studies from other new Crisis Units in the Connecticut Mental Health care system would be useful for comparison.

Introduction

IN early 1986, Connecticut's Department of Mental Health (DMH) created the Emergency Crisis Intervention Program (E/CIP) in an attempt to provide early intervention for chronically ill and disadvantaged psychiatric patients who were presenting to emergency rooms of Connecticut hospitals. The usefulness of emergency crisis and alternative services to interrupt and avoid unnecessary hospitalization has been repeatedly documented: in the military;[2] in Holland using community outreach;[3] in day hospitals;[4,5] in outreach ambulatory programs; [6,7] in very short-stay hospital units;[8] and in more comprehensive programs with multiple possible intervention strategies and defined responsibility for continuing care responsibilities.[9-12]

At the Connecticut Mental Health Center (CMHC), in conjunction with the Yale Department of Psychiatry, a CMHC Director's survey indicated that at least one third of patients who went on to hospitalization could be rapidly treated at a crisis unit and/or day hospital with energetic acute treatment. The target population to be served consisted of patients who were poor or near poor, chronically, severely ill, lacking in social supports, and needing crisis-oriented inpatient or community-based stabilization with rapid reconnection to aftercare. Also, the development of E/CIP at the CMHC was seen as a crucial step in the evolution of a comprehensive service system for the chronically ill disadvantaged patients residing in these towns and cities served by CMHC.

Thus, as set up at CMHC, E/CIP consisted of a triage team of four rotating attending psychiatrists, two experienced nurse clinicians, plus a four-bed, five-day stay Crisis Unit (CU), directed by one of the attending psychiatrists and serving a particular catchment area. Patients were eligible for admission voluntarily or certified by a physician. Admission from catchment area emergency rooms was available within 24 hours. Additionally three, three-week stay, ten-bed inpatient teams, a large outpatient clinic, and a 20-patient day hospital were also available to the triage team for placement of patients.

With this responsive triage team, triage process, and crisis inpatient unit in place, it became possible to study the target population of all patients who were admitted to one element of the program, the E/CIP Crisis Unit (CU), and to identify their characteristics, especially those of patients repeatedly admitted to it. This paper reports our findings.

Subjects and Methods

Study patients were those consecutively admitted to the CMHC CU during a one-year period which began two months after E/CIP's inception. The CMHC Multistate Information System-2 (MSIS-2) database[1] provided information about a variety of demographic and diagnostic characteristics for two comparison groups: those who were admitted once to E/CIP CU, and those admitted more than once (CU repeaters).

In the second phase of this study, E/CIP CU repeaters were compared with control patients admitted to CU once (nonrepeaters). Control patients were admitted

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within two months of CU repeaters matched for age, sex, and DSM III-R primary psychiatric diagnosis, but not for substance abuse if not a primary diagnosis.

Repeater and control patient characteristics were then compared using triage team, treating clinician, and chart data. The MSIS-2 DMH database system also provided lifetime psychiatric histories, i.e., all repeater and control, inpatient, outpatient, and day hospital contacts within the DMH catchment area. Group differences were compared using X_2, Fisher exact, and Student t-tests where appropriate.

Results

There were 202 individual patient admissions to the E/CIP CU during the sampling year. Fifteen were initially listed as being admitted to CU more than once. Review of these revealed that four were admitted for administrative reasons, when for three, longer term inpatient CMHC beds were unavailable, and for the fourth use of an E/CIP CU bed for an administrative transfer to the Department of Mental Retardation. Admissions to E/CIP CU beds were rarely used to substitute for admission to acute inpatient beds. Thus, 11 of 202 patients (5.4%) were E/CIP CU inpatient repeaters (designated R; 191 nonrepeaters will be designated NR). Table 1 lists R and NR patient demographic and general diagnostic characteristics.

Table 1

DEMOGRAPHIC & DIAGNOSTIC CHARACTERISTICS OF E/CIP INPATIENT UNIT REPEAT (R) AND SINGLE ADMISSION (NR) PATIENTS

VARIABLE		*R*	*NR*
NUMBER		11	191
AGE	Range	27-45	19-83
	Mean ± SD.	31 ± 7.6	34 ± 13.6
SEX	Male	4 (36%)	71 (37%)
	Female	7	120
RACE	White	8 (72%)	119 (61%)
	Black	2 (18%)	55 (29%)
	Hispanic	1 (9%)	17 (9%)
Legal Status	Voluntary	20 (75%)	81 (42%)
At Admission	Certified	5	110
By Episode			x^2df,1= 10.77, p<.05*
Referral Following			
E/CIP UNIT,	Inpatient	5 (20%)	52 (27%)
By Episode	Day Hospital	3 (12%)	32 (17%)
	Outpatient	17 (68%)	105 (55%)
	Refused	- -	2 (1%)
DSM III—R Diagnoses			
Schizophrenia		2 (18%)	36 (19%)
Other Psychotic **		2 (18%)	33 (17%)
Major Affective		3 (27%)	61 (32%)
1^0 personality disorder		2 (18%)	13 (7%)
1^0 substance abuse		2 (18%)	36 (19%)
Other ***		-	12 (6%)

*Yates' correction applied

**includes schizoaffective disorder

***includes anxiety/somatization disorders, organic brain syndrome, mental retardation, adjustment/conduct disorders or social condition admission

Table 2

DEMOGRAPHIC & DIAGNOSTIC
CHARACTERISTICS OF REPEATER (R) & NON REPEATER CONTROLS (NRC)
INCLUDING LENGTH OF CONTACT WITH CMHC IN MONTHS

REPEATER					*NON-REPEATER CONTROL*		
AGE/RACE/ SEX	*ALCOHOL ABUSE*	*POLY SUBSTANCE ABUSE*	*LENGTH LIFETIME CMHC CONTACT (MONTHS)*		*AGE/RACE/ SEX*	*ALCOHOL ABUSE*	*POLY SUBSTANCE ABUSE*
Chronic schizophrenia							
1) 43 WM			85	208	43 WM		
2) 24 BM			52	58	26 BM		
Schizoaffective disorder							
3) 24 BF			32	22	28 BF		
4) 45 WM			232	83	49 WM	+	
Major affective disorder							
5) 29 WF	+	+	233	2	29 WF	+	+
6) 37 WF			8	200	43 WF		
7) 27 WF			20	10	27 WF		
1^0 Personality disorder							
8) 34 WF	+	+	256	59	28 WF	+	
9) 24 HM	+	+	17	2	26 HM		+
1^0 Substance abuse disorder							
10) 32 WF	+	+	44	110	30 WF		+
11) 24 WF	+		61	74	26 WF	+	+

The age range of repeater patients was much narrower than that of nonrepeaters, though mean ages of the two groups were not significantly different. Repeaters had significantly more voluntary admission *episodes* (20 of 25 hospitalization episodes). Seven of 11 repeater *patients* (64%) were hospitalized each time voluntarily. This was a higher proportion than the 42% of NR patients admitted voluntarily.

NR and R groups were similar across major diagnoses. However, though subgroup numbers were small, proportionally more patients with primary personality disorder diagnoses were admitted to CU, and no patients with other psychopathologically minor diagnoses were. It is notable that although the CU was established to serve the target population served by the Connecticut Department of Mental Health, almost 20% of admissions were of patients with important substance abuse problems. Eight of 11 were admitted twice; three patients, all males, all psychotic, were admitted three times to the crisis unit. By episode, more CU repeaters were released to outpatient follow-up, due largely to the three patients who were admitted three times being released each time to outpatient follow-up.

From the second phase of the study, Table 2 lists repeater (R) and nonrepeater control (NRC) patient characteristics. R and NRC patients were not matched for length of lifetime contact with CMHC, and among both groups over two-thirds had more than a two-year contact history. Repeaters had a higher mean length of lifetime contact with CMHC (95±92 vs. 75±69) months, which however was not significantly different from that of nonrepeaters. Number of R and NRC dual diagnosis patients were strikingly similar, though no attempt was made to find NRC patients whose substance abuse histories were similar to those of R patients. About one third of those without a substance abuse primary diagnosis had in fact a major substance abuse problem.

Differences emerged when CU repeaters and their nonrepeater controls were compared beyond demographics and diagnoses (Table 3). Statistically significant factors that characterized E/CIP CU repeaters were: good compliance with medication, CMHC contact-seeking behavior, and poor social and housing supports.

Table 3
CLINICAL AND PSYCHOSOCIAL PROFILE OF E/CIP UNIT REPEATERS (R) AND THEIR NONREPEATER CONTROLS (NRC)

VARIABLE	*R* (*N*=11)	*NR* (*N*=11)
Compliant with medication **	10	3
Compliant with treatment	8	4
Contact-seeking behavior *	8	3
Good support network*		
Persons*	3	9
Housing*	6	11
Referred for additional chronic state hospitalization in past year	6	2
Suicidal attempts in past year	4	3
Threatening, crisis-inducing behavior in past year	6	7
Current substance abuse (DSM III-R criteria)		
alcohol alone	1	3
cocaine/heroin ± alcohol	4	3
History of concussion	3	2
Ongoing treatment, medical problems	0	2

Fisher exact test
**$p = .01$
*$p < .05$

Compliance with medication was defined as present when no more than 30% of inpatient, outpatient, and day hospital notes of the patient's CMHC contacts made mention of refusal to take medication. The exception was if the patient had acute psychotic decompensation and temporarily refused to take medication. Similarly, compliance with treatment was defined as the patient keeping 70% of appointments as judged by chart notations. Frequent mental health care contact-seeking behavior was a global (yes/no) rating by the two E/CIP triage nurses who were in touch with all parts of the catchment area mental health system. Good support network variables were judged by finding chart notations that family members, friends, and/or persons at site of living were interested in and available to the patient throughout, and that housing was immediately and readily available to the patient upon discharge.

Eight of eleven nonrepeater control (NRC) patients (73%) were discharged to outpatient follow-up. Within the repeater (R) group, five of 11 (45%) were able to leave the hospital each time after being hospitalized on E/CIP CU. However, three of these were rehospitalized at the chronic state facility between E/CIP CU contacts. In fact, referral of eight R and NRC patients for hospitalization at the state facility for longer term inpatient care was highly associated in six patients who had two or more of the following factors: hostile/aggressive/demanding personality characteristics, alcohol abuse, cocaine or heroin abuse, and total alienation of personal supports. A larger sample of repeaters from E/CIP and other inpatient units with greater numbers of patients might further characterize clusters of variables predicting increased use of service.

Discussion

Important questions relevant to the development of policy for the treatment of patients with prolonged psychiatric disorders have to do with the identification of subpopulations who overutilize and/or require extensive resources to permit community-based treatment, and the identification of those resources that are appropriate to patient needs.[13-19]

E/CIP was designed to develop crisis-focused services in order to avoid hospitalization of patients wth prolonged psychiatric disorders. Our data indicate that this goal was substantially met. E/CIP CU inpatients were a relatively young group (mean age about 34 with an extensive history of prior treatment (mean between six and eight years). Of the 202 patients admitted, over half were certified; that is, physicians judged them as requiring involuntary referral to care. Forty percent of all CU patients required continued hospital level care, and 60% could be returned to community settings after crisis intervention. Data have not yet been analyzed to show whether readmissions to inpatient care occurred within one month of discharge from E/CIP CU, but early impressions from additional preliminary data suggest that such admissions are not more frequent than admissions following acute inpatient care.

The small group (5%) requiring repeated CU inpatient care are of particular interest. While clinically and demographically they seemed to resemble the population admitted only once during the year to CU, they had characteristics indicating that they were high users of care generally. They were generally compliant with care, but additionally had considerably less stable social, personal, and housing resources than less intensive users of care. These data, and other unpublished data,[20] suggest that with patients in repeated crises special attention ought to be focused upon clinical and social interventions which are directed towards stabilizing living conditions,and rapidly accessible community living settings must be made available for them.

Further, a hint of clusters of important variables emerged that should be studied next in those repeatedly hospitalized in all of the CMHC inpatient psychiatric units. The cluster of substance abuse, personality traits of a hostile, aggressive kind, and alienation of personal support systems lead to referral for chronic hospitalization; these will deserve further study.

It would be interesting to see this study repeated in other Connecticut DMH E/CIP programs to see if practice profiles are similar. In this setting, a larger study of repeater and nonrepeater patients from this catchment area is currently underway.

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Matriculating Student Questionnaire School Summary Reports Completed

School summary reports from the first Matriculating Student Questionnaire (MSQ) initiated last fall were sent to medical school deans last week. The questionnaire, administered by the AAMC Section for Student and Educational Programs, was returned by 13,116 students, 82.4 percent of the entering medical school class. The survey provides data about the characteristics of new entrants, their career plans, experiences in applying to medical school, financial status and perceptions of medicine and medical practice.

For example, 53 percent of the respondents indicated that the most important factor in their choice of medicine as a career is an interest in helping people. These new matriculants appear to have a realistic view of how medicine is changing, as illustrated by these responses to a series of statements about medicine and medical practice.

- Medicine will not be as financially rewarding in the future as in the past (90.7% agree);
- Changes in the health care system are impairing physicians' independence (84.2% agree);
- Physicians' legal liabilities and the high cost of malpractice insurance are major problems (97.6% agree);
- Having interesting and intelligent colleagues is a major benefit of being a physician (90.5% agree);
- Everyone is entitled to receive adequate medical care regardless of his or her station in life (91.5% agree);
- Advances in biomedical sciences and their application to the care of patients will make being a doctor more stimulating, challenging and fulfilling in the future (95.9% agree.)

Each school's report will compare its students' responses to those of the national group. The MSQ is designed to correlate with the AAMC's annual Graduation Questionnaire, which these students will fill out in the middle of their senior year in 1992. The AAMC will compare students' responses to the two questionnaires to observe the effect of medical education on their career plans and perceptions.

(For more information, phone MSQ Coordinator Diane W. Lindley, 202-828-0576.)

— Association of American Medical Colleges Weekly Report, Vol. 2, No. 28, June 1988

Bronchial Carcinoid Tumor: The Experience in a Community Hospital

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RICHARD L. ZUWALLACK, M.D., AND BIMALIN LAHIRI, M.D.

ABSTRACT—Twenty-three cases of bronchial carcinoid tumor seen over 27 years in a community hospital were retrospectively reviewed. They consisted of 0.9% of patients with lung tumor. The common presentations were recurrent pulmonary infection, cough, chest pain, and hemoptysis. However, nine patients (39%) remained asymptomatic after an abnormal chest radiograph was noted incidentally. Of 22 patients receiving bronchoscopic examination, 17 (77%) had visible tumors. Bronchial biospsy was performed in 11 patients and led to a diagnosis in nine. There was no severe hemorrhage resulting from bronchial biopsy. Of 19 cases whose original pathologic slides were available for reexamination, two (10%) were atypical carcinoids. Lymph node involvement was found in four patients at the time of thoracotomy. Lobectomy was the most common surgical procedure in this series. The general outcome of patients, observed from two to 16 years, was good, except for two patients, one with a typical and the other with an atypical carcinoid, who died as the result of dissemination of these tumors.

Introduction

FIRST described by Müller in 1882,[1] bronchial carcinoid tumor remains an uncommon and poorly understood neoplasm. In distinction to bronchial carcinoma, it tends to occur in a younger age group and has no established relationship with environmental factors such as cigarette smoking. It probably shares with small-cell carcinoma a common origin, the Kulchitsky cell, a cell normally appearing in the respiratory tract.[2] Although it was originally considered a benign tumor with a favorable prognosis, recent publications emphasize its malignant potential and report a poorer prognosis in a subset of patients showing cellular atypia.[3-8] With the suspicion that cases reported by cancer institutions or referral centers might be more advanced, we retrospectively reviewed all cases of bronchial carcinoid tumor diagnosed and treated in a community hospital over a period of 27 years.

Materials and Methods

All records at St. Francis Hospital and Medical Center, Hartford, Connecticut, during the period from 1959 to 1985 with a diagnosis of bronchial carcinoid were retrospectively reviewed. The total number of other lung tumors in this period was also obtained in order to calculate an overall percentage of bronchial carcinoid. Twenty-three cases of bronchial carcinoid were identified from this review.

The original pathologic slides were available in 19 of these patients. They were reexamined by another pathologist (AYW) without knowledge of patients' history or disease outcome. The tumors were then histologically subcategorized into typical and atypical carcinoids according to criteria defined by Arrigoni and associates.[3] Typical bronchial carcinoid tumor (Figure 1) has a nested or ribbon-like appearance. The arrangement of cells is quite orderly and is separated by stromal septa of variable thickness and vascularity (Figure 1). The atypical variant (Figure 2), on the other hand, is characterized by one or a combination of the following features: increased mitotic activity, pleomorphic and irregular nuclei with hyperchromatism and abnormal nuclear-cytoplasmic ratio, increased cellularity with disorganization of architecture, and areas of tumor necrosis.

Analysis of the patients' clinical course was made by evaluating follow-up hospital medical records and by correspondence with the primary physicians.

Results

Of the 23 patients with pathologically documented bronchial carcinoid tumors, 12 were females and 11 were males. Their ages at diagnosis ranged from 15 to 80 years, with a mean of 44 years. Bronchial carcinoid constituted 0.9% of the total 2,478 lung tumors recorded at this institution during this 25 year period. Prior to the availability of flexible fiberoptic bronchoscopy in this institution (1972), this percentage was 0.5%, while it was 1.1% of all lung tumors subsequent to that date.

The clinical manifestations at presentation were: cough (seven patients), chest pain in six, hemoptysis in three,

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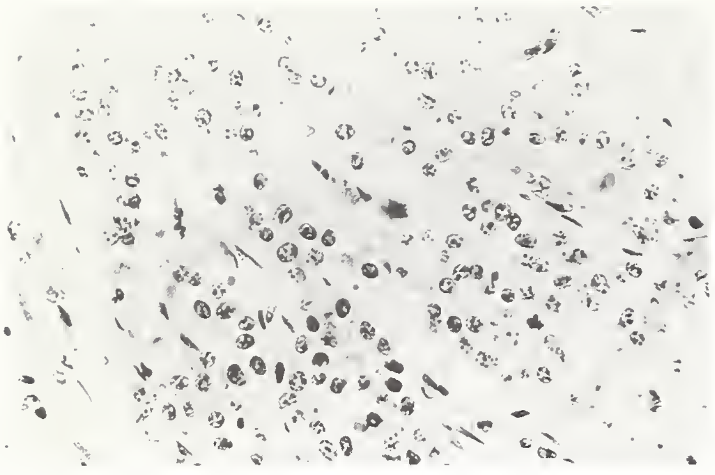

Figure 1

Typical carcinoid. The tumor cells contain round uniform nuclei and are arranged in regular trabecular or ribbon-like pattern. (H & E, x 400)

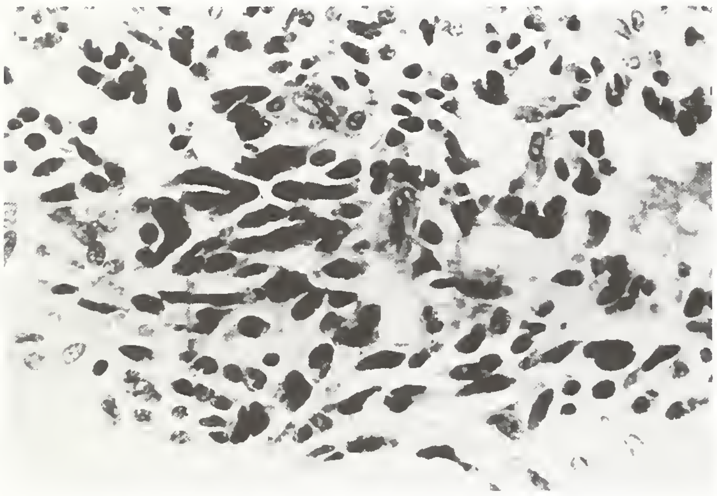

Figure 2

Atypical carcinoid. The tumor cells appear pleomorphic with large, hyperchromatic nuclei, and high nuclear-cytoplasmic ratio. There is disorganization of the architecture. (H & E, x 400)

fever in three, dyspnea in one, weight loss in one, and general weakness in one. Nine patients had a history of recurrent pneumonia. There were no patients with carcinoid syndrome or with Cushing's syndrome. The duration of symptoms prior to hospital admission varied from several days to 14 months. However, nine patients were asymptomatic with an abnormal chest radiograph found only incidentally.

The findings by chest radiography were nodular or mass lesion in 14 patients and lobular or segmental infiltration in nine. Six patients also had evidence of atelectasis. One patient, a 55-year-old asymptomatic male with a radiographically stable solitary pulmonary nodule for ten years, came to medical attention when the size of his lesion increased. He was found to have a typical carcinoid tumor.

Bronchoscopy was the most common diagnostic approach in this series. It was performed on 22 patients: 17 (77%) had visible lesions in the main-stem or lobar bronchus, while five (23%) had normal examinations. Eleven of the 17 patients with visible endobronchial lesions also had bronchial biopsies, which led to correct diagnosis in nine cases. The specimens of the bronchial biopsy from the remaining two patients were misread in one instance as carcinoma, and in the other as a nonspecific inflammatory change. There was no severe hemorrhage occurring during or after the bronchial biopsy procedure. Preoperative needle biopsy was performed on one patient with peripheral carcinoid tumor. It was misinterpreted as a small-cell carcinoma of the lung.

Histologic diagnosis of bronchial carcinoid tumor was made or confirmed by examining the resected tumors in all patients. Of the 19 patients whose original pathologic specimens were available for reexamination, two (10%) were classified as atypical carcinoids while 17 were typical carcinoids.

The locations of tumors were right middle lobe in four patients, right lower lobe in five, right upper lobe in four, left upper lobe in four, left lower lobe in four, and left main-stem bronchus in one. Multiple lobe involvement occurred in two cases. Tumor size varied from 1 cm to 5 cm in diameter.

All 23 patients had surgical treatment, which consisted of lobectomy (14 patients), bilobectomy in four, pneumonectomy in four, and bronchial sleeve resection in one. Local lymph nodes were usually removed during the operation. Of the patients undergoing lobectomy, two had had prior operations of segmentectomy, and one had had an endoscopic removal of tumor. These three patients required second operations of lobectomy because of local recurrence of tumors.

Four patients (17%) were found to have lymph node metastases at the time of thoracotomy. Three of them, who had a diagnosis of typical carcinoid, were alive and disease-free three, five, and 13 years after operation. The remaining patient, who was found to have an atypical carcinoid, expired three years after the diagnosis was made.

The follow-up observation period ranged from two to 16 years. Twenty of 23 patients were alive and disease-free at the time when this study was done. Three patients (13%) died during the period of follow-up. One patient (mentioned above) with atypical carcinoid, who initially had mediastinal lymph node metastases, expired three years later in spite of pneumonectomy and aggressive medical treatment. Another patient, a 46-year-old female with a typical carcinoid tumor, developed metastases to the pleura and bone. She died three years after the diagnosis was established. There were no lymph node metastases noted at the time of thoracotomy in this patient. The third patient died of squamous cell carcinoma of lung ten years after an apparent surgical cure of a typical carcinoid tumor. Thus, only two deaths in this series of 23 patients were directly the result of their bronchial carcinoid tumors.

Discussion

Bronchial carcinoid tumor, bronchial adenoid cystic carcinoma, and bronchial mucoepidermoid tumor used to be classified as bronchial adenoma.[1] Of them, bronchial carcinoid is by far the most common, constituting

90% of most series of bronchial adenoma.[1] Since the term "bronchial adenoma" comprises such a heterogenous group of tumors with a variety of morphologies, origins, and malignant potentials, several investigators[4,7,8] suggested this rather artificial grouping no longer be used.

Bronchial carcinoid tumors have been reported to comprise 1% to 5% of all primary lung neoplasms.[1,9] In our hospital this percentage averaged 0.9% over the past 27 years. Of interest, the relative percentage has seemingly increased over the past decade, from 0.5% prior to 1972 to 1.1% after this date. Although this increase may reflect a true increase in incidence relative to carcinoma, more probably it is a result of improved diagnosis resulting from the more frequent use of flexible fiberoptic bronchoscopy in the investigation of recurrent pulmonary infection and hemoptysis, both common manifestations of bronchial carcinoid tumor.

The symptomatology, age, and sex distribution in this series are similar to those found by others .[7,8,10] In cases with tumor originating from the major bronchus, recurrent pneumonia, cough, chest pain, hemoptysis, and wheezing were the common presentations. In patients with tumors beyond the reach of the fiberoptic bronchoscope (ie, peripheral carcinoids), most were asymptomatic when an abnormal chest radiograph was incidentally discovered. Uncommon manifestations, such as carcinoid syndrome and Cushing's syndrome, have been described in patients with bronchial carcinoid, especially with metastases to the liver.[8,10,11] We found no cases associated with carcinoid syndrome or Cushing's syndrome in this series.

The risk of severe hemorrhage associated with bronchoscopic biopsy remains the subject of disagreement. In this series, bronchial biopsy was performed through the bronchoscope in 11 of 17 patients with centrally located tumors. No uncontrollable hemorrhage occurred in any of these patients. In nine of the 11 biopsies the correct diagnosis of bronchial carcinoid was made. In six patients a biopsy was not performed at the time of endoscopy because the gross appearance of the tumor was sufficiently distinctive to permit a tentative diagnosis of carcinoid, and the physicians decided not to risk a hemorrhage from the biopsy procedure. A recent study,[8] however, commented on the lower risk of hemorrhage with biopsy through the flexible fiberoptic bronchoscope, a conclusion supported by our series.

The value of cytologic examination of sputum or bronchial washings in the diagnosis of bronchial carcinoid has yet to be established.[8] Occasionally, bronchial or needle biopsy specimens may be confused with carcinoma as noted in this series and in previous reports.[8,12,13]

Arrigoni and his colleagues[3] reviewed the cases of bronchial carcinoid tumors seen at Mayo Clinic and classified 11% of these tumors as histologically atypical variants. It should be noted that they found that metastases developed in 70% of patients with atypical bronchial carcinoid tumors in comparison with 5.6% metastases in typical carcinoid tumors. This led to their conclusion that patients with atypical carcinoid had a significantly poorer prognosis. Similarly, Attar et al[7] reported a ten-year survival in 88% of patients with typical carcinoid and in 59% of those with atypical carcinoid. In addition, McCaughan and associates[8] reported from a cancer institution that histologically atypical carcinoid, regional lymph node involvement, and tumor size greater than 3 cm were the predisposing factors associated with recurrence. When comparing our series with others, we had a similar percentage of atypical variants and mortality in patients with atypical carcinoids. However, in this series, patients with typical carcinoid and local lymph node metastases seemed to have a fairly good prognosis when both tumors and lymph nodes were completely removed. There was no recurrence of tumors in all three such patients during the period of follow-up.

Differentiating typical bronchial carcinoid tumor from small-cell carcinoma of the lung by using light microscopy usually is not difficult when the entire tumor is available for examination. In contraversial cases, however, confirmation of carcinoid tumors requires special stains or ultrastructural study. The majority of carcinoid tumors have a positive argyrophil reaction with Grimelius stain and obvious desmosomes and dense-core granules when examined by electron microscopy.[14,15] Because of the limitation of morphologic studies in predicting recurrence, DeCaro et al[6] studied the mean DNA content of typical and atypical carcinoid tumors and of small-cell carcinoma of the lung. Their investigation demonstrated an increased DNA content in the more malignant tumors, and they suggested that this method be used to assess the prognosis and therapeutic plan. However, the technique of analyzing DNA content is not always available.

Lobectomy was the most common surgical treatment in our hospital. This is not in complete accord with the recent literature[6,7,10] which tends to favor a surgical approach that preserves as much normal lung tissue as possible, particularly in cases of peripheral carcinoid tumors and those centrally located tumors limited to a main-stem bronchus. The former usually can be removed by segmental excision; the latter by bronchial sleeve resection.

In conclusion, we reemphasize that bronchial carcinoid tumor is not rare and should be considered in the differential diagnosis of recurrent pulmonary infection and hemoptysis, particularly if the patient is young. Approximately one-third of patients may be asymptomatic and present only with an abnormal chest radiograph. Recognizing the atypical variant of this tumor by histologic examination is important because of its higher malignant potential and unfavorable prognosis. Close follow-up by bronchoscopy and radiologic evaluation should always be provided after surgical treatment. Favorable outcome can usually be achieved when the tumor has been adequately removed.

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Total Hip Replacement Update: Cement *v* Cementless Arthroplasty

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ABSTRACT—Since Charnley first popularized the cemented total hip arthroplasty (THA) using methylmethacrylate, orthopaedic surgeons have realized that permanent fixation was not attainable with the cemented THA technique. Even though the results with the cemented Charnley-type prosthesis are excellent in the majority of cases, there is a significant percentage of disasterous cement failures. This difficulty has prompted surgeons to begin using more cementless components. Although promising, cementless THA is still in the developmental stage and the tendency for surgeons to oscillate between the two techniques may be perplexing to the medical community. Therefore, we feel that a review of the current state of cemented *v* cementless THA would be timely.

TOTAL Hip Arthroplasty (THA) has revolutionized the treatment of severe arthritis of the hip joint and is considered to be one of the most consistently successful of all major surgical procedures.[1,2] The overall success rate of approximately 90% rivals coronary artery bypass surgery in its potential to elminate pain,[2] while the mortality rate in this predominately geriatric, higher risk patient population has been consistently less than 1%.[3,4,5] In addition to pain relief, THA can minimize patient disability by often maintaining or restoring a more normal functional level. Nevitt et al noted that 93% of all patients gainfully employed prior to THA were working postoperatively, and of those disabled preoperatively, 54% were able to return to work following surgery.[6] In a study of over 1,000 patients, Kay et al demonstrated a 97% rate of patient satisfaction following THA.[7] The result has been approximately 80,000 primary or "first time" THAs being performed yearly in the United States[8] and because of its impact on modern health care, many general practitioners have developed a basic understanding of the procedure with its benefits and limitations.

Before Charnley and the use of methylmethacrylate bone cement, hip component materials demonstrated suboptimal mechanical properties and caused extensive soft tissue reaction.[9] With the development of stronger, more inert materials, ie, cobalt-chromium aloys, stainless steel, and titanium, came a rising optimism in the hip replacement procedure as distinguished orthopaedic pioneers such as Bohlman, Moore, Judet, Thompson, and Ring designed new THA prostheses.[1,9] While partial or total hip replacement became more prevalent, orthopaedists encountered problems with early component instability and migration as component loosening became the next obstacle in the quest for an effective prosthetic joint.[9]

The first major step toward overcoming early loosening was Charnley's concept of low friction arthroplasty, the articulation of a metallic femoral prosthesis with a high density polyethylene or "plastic-like" acetabular component.[10] Although this greatly reduced implant wear characteristics and stresses, it was the introduction of acrylic methylmethacrylate bone cement by Haboush[11] which was later popularized by Charnley that proved to be the monumental development in modern THA. Shown by Charnley to prevent rapid component loosening and instability, the cement does not function as an adhesive, but instead it creates a tight bond between the implant and bone, allowing for wide stress distribution and immediate stability. After more than 25 years of experience with cement, and clinical follow-up studies with acceptably long-term success rates, it is clear that lifetime fixation is not always possible with cement.[12,13,14] The most frequent current complication of cemented hip arthroplasty, despite extensive modifications of the original indications and surgical technique, is the eventual loosening of the prosthesis and the subsequent necessity for revision surgery.[4] Morscher substantiated the severity of this problem by showing recently that the incidence of revision THA in his clinic has increased each year, while the number of primary hip replacements has remained constant.[15] The basis for this problem is perhaps best explained by the following analogy: when implants are employed to facilitate fracture healing, the stabilizing effect of the device is gradually assumed by the healing bone, while in cemented THA the synthetic bond between the prosthesis and the bone is expected to function immediately and permanently at maximum capacity. The "life" of the construct depends on the nature and frequency of the demands placed upon it and longevity is

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only feasible if a biological and mechanical equilibrium is established between the implant and the surrounding bone.

About 1975, cementless arthroplasty began in earnest when European surgeons performed clinical trials with femoral components inserted into the medullary canal in a tight, "press-fit" nature, or they used a fenestrated, "macroporous" design for fixation.[15] The Europeans applied the same principle to the acetabular cups which were designed for either "press-fit," threaded "screw-in" fixation, or fixation by screws placed through the periphery of the prosthesis. These designs evolved into component surface-mesh systems of microporous beads to increase the surface area into which bone could "grow," thus providing a biological locking of bone and prosthesis. Researchers now feel that the better the bony ingrowth, the more durable the construct.[16]

The microporous component surface coatings, consisting of either beads or mesh approximately 20 to 150 microns in size, have demonstrated encouraging short-term laboratory and clinical results.[17] Initial failures were due to implant materials whose biomechanical properties conflicted with those of bone, or whose designs did not facilitate the ingrowth of bone. As these structural flaws were corrected, it was realized that, while some component designs achieved success with better ingrowth, others developed their stability from a tight fibrous layer without bony growth. However, regardless of the system utilized surgeons have become aware of the precise operative techniques necessary to obtain the immediate press-fit required in both types of fixation.[15,18] The result has been elaborate instrumentation with a multitude of component sizes and variations.[19] Although cementless THA techniques have progressed rapidly, efficiently, and with much optimism, the experience with current components, instrumentation, and techniques is relatively short, and objective comparisons with the established cemented total-hip prosthesis are difficult.[15]

Because of the documented short term reliability of cemented THA, surgeons should continue to employ this technique in older patients with lower activity levels and with such diagnoses as osteoarthritis, rheumatoid arthritis, avascular necrosis, Gaucher's disease, Paget's disease, systemic lupus erythematosis, ankylosing spondylitis, psoriatic arthritis, chondrodysplasias, metastatic bone disease, and hemophilia.[2,3,5] New cementing techniques, such as pressurized cement insertion, better prosthetic designs, including larger femoral stem/medullary canal ratios, and improved implant materials have added longevity to the cemented hip replacement.[2] Finally, changes in the actual cement have given the cemented THA even greater appeal; centrifuging has made the cement stronger, low viscosity cement allows for better bone interdigitation, and antibiotic cement can actively or prophylactically counteract sepsis.[2,20]

Despite these refinements in technique, the cemented THA has been much less gratifying in younger patients, obese patients, or patients involved in repetitive, vigorous labor because of early component failure.[9,21,22] Revision and reconstruction of loose cemented hips can be very difficult. As it loosens, the cement destroys surrounding bone and creates large bony defects that may require extensive bone grafting, custom made prostheses, long stems, and a variety of wires, rings, screws, and other devices. In addition, the removal of cement from the depths of the dark and bloody femoral canal is always frought with such complications as shaft fractures, shaft perforations, and excessive bone removal. Furthermore, the longevity of cemented revisions has not approached that of the preceding primary cemented THA. Three-year failure rates as high as 29% have been reported.[9,23,24] At this time, cementless techniques should be considered in young and active patients.

Although categorizing patients as younger implies chronologic age, the physiologic or functional age would better identify those patients who would subject the arthroplasty to excessive activity levels once relieved of their debilitating hip pain. Harris has had such encouraging short term results (two to five years) with cementless THA that he now defines the younger patient as anyone less than 60 years of age.[25] With initial follow-up reports suggesting that activity level does not affect the results of cementless THA,[26] the middle-aged arthroplasty patient has nothing to lose from the technique and potentially much to gain. Revision of noncemented total hip prostheses should also be easier since there will be less bone loss. One of the best indications for cementless THA is in the revision of failed cemented primary or a cemented revision THA where the results have been abysmal.[2,9,15,25] Early reports of cementless revisions have been satisfactory even when the surgeon must use extensive bone autograft or allograft to reconstitute bone stock loss.[28] In any case there is now rising optimism for the future of cementless prosthesis because of better implant surfaces for bony ingrowth.[17,18] Improved methods of coating implants to facilitate bone penetration,[18] and new carbon fiber composite materials may drastically enhance the biomechanical compatibility of cementless components.[28,29] Finally, more precise instrumentation and a greater variety of component sizes should assist in achieving the stable intraoperative press fit which appears to be crucial for bony ingrowth to occur.[16,26]

However, because of the instrument and component complexity in cementless THA and the unforgiving nature of the procedure,[19] it demands special, practiced surgical skills. It is not an operation for the occasional hip surgeon. Well-controlled, short-term clinical series by surgeons accomplished in these new techniques are extremely favorable; Engh has reported no femoral revisions to date in a series of over 400 cases with an average two to five year follow-up.[26] Cementless acetabular cup fixation has progressed even faster than cementless femoral stems and Harris has abandoned the use of cement altogether.[25] Still, most surgeons would agree that healthy bone stock in a compliant patient is essential for successful cementless THA. Yet, even in this ideal patient population, the clinical experience has been too limited to date, and surgeons have been understandably prudent in their reluctance to forego cement in the older group.

The perfect hip replacement is nonexistent. The use of more cementless components represents an expansion of the art of arthroplasty. Well controlled, large clinical trials with long-term results greater than five years for the femoral stem, and greater than ten years for the acetabular cup are necessary. At the present time, cemented THA remains the choice for the physiologically older patient. The noncemented THA is probably indicated in the young, the active, and the heavy who cannot be helped by any other orthopaedic procedure. It should also be considered in patients who require replacement because of failed implants.

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Important Advances in Clinical Medicine

Chest Diseases

The Scientific Board of the California Medical Association presents the following inventory of items of progress in chest diseases. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in chest diseases that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Chest Diseases of the California Medical Association and the summaries were prepared under its direction.

Benefits of Hyperbaric Oxygen Therapy in Infectious Disease

HYPERBARIC oxygen greatly enhances the effectiveness of conventional therapy in treating necrotizing soft tissue infections, refractory osteomyelitis, and infected ischemic wounds. The mechanisms of this therapy explain its beneficial effects. Tissue oxygen tension has been found to be substantially reduced in infected tissue. Standard hyperbaric oxygen treatment increases the oxygen tension to normal or above normal in infected tissues. Tissue oxygen tensions increase with repetitive treatments. The increased oxygen tension produced by hyperbaric oxygen leads to the enhanced production of superoxide, hydrogen peroxide, and other toxic oxygen radicals.

Thereby, on strict anaerobic organisms, hyperbaric oxygen has a direct bactericidal effect through the production of toxic radicals. Anaerobic organisms are extremely sensitive to these oxygen radicals because most lack the superoxide-degrading enzyme, superoxide dismutase, and the hydrogen peroxide-degrading enzyme, catalase. In contrast to anaerobic organisms, hyperbaric oxygen has no direct effect on aerobic organisms. Hyperoxic conditions induce aerobic organisms to produce increased concentrations of superoxide dismutase. Phagocytic killing of many aerobic organisms is diminished under the hypoxic conditions found in infected tissues. The oxygen-dependent intracellular killing mechanisms of polymorphonuclear leukocytes require oxygen to rapidly kill many aerobic organisms. When the required oxygen is available in infected tissue through the use of hyperbaric oxygen, the level of polymorphonuclear leukocyte killing of aerobic organisms returns to normal or above normal. In addition, the aminoglycoside class of antibiotics does not kill well under low oxygen conditions. Hyperbaric oxygen potentiates the bactericidal effects of tobramycin and possibly other aminoglycosides.

Increased oxygen tension enhances wound healing by facilitating new collagen formation and subsequent angiogenesis. When the environment of fibroblasts has a low oxygen tension—less than 10 mm of mercury—the cells cannot sensitize collagen or migrate appropriately. Hyperbaric oxygen increases the oxygen availability to the fibroblasts and thereby facilitates new collagen formation and subsequent angiogenesis or migration of the ingrowing blood vessels. Hyperbaric oxygen, therefore, promotes faster healing in hypoxic infected wounds not only by increasing the effectiveness of the antibiotics but also by enhancing the collagen production and blood vessel migration.

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Airway Obstruction in Sarcoidosis

THE lungs are the most commonly involved organs in patients with sarcoidosis. The granulomata typically occur along lobular septa and are scattered throughout the pulmonary interstitium and alveolar walls. Bronchial or peribronchial granulomata occur frequently, and a granulomatous mass may protrude into the bronchial lumen on occasion. In the past, extensive physiologic studies, with a few exceptions, emphasized functional changes characteristic of restrictive pulmonary disease—that is, reduced static lung volumes, impaired diffusing capacity (transfer factor), and reduced pulmonary compliance. Recently, however, several studies have reassessed airway function in sarcoidosis.

In one study from Greece, airflow obstruction was noted in at least 30% of stage I patients and at least 44% of stage II patients. In another study of 123 consecutive black patients with sarcoidosis, 78 (63%) had reduced ratios of the forced expiratory volume in one second (FEV_1) to the forced vital capacity. Thus, airway obstruction is a common feature of sarcoidosis; the exact incidence of the abnormality varies, depending on racial and genetic factors.

Sarcoid granulomata protrude in the lumen of the airways and influence their function; enlarged lymph nodes may compress bronchi and produce narrowing; finally, in advanced cases, fibrosis may result in substantial distortion of the breathing tubes. Main, lobar, segmental, and subsegmental airways may all be involved. Decreased lung volumes might account for the flow reduction in many cases. In a large number of cases, however, the pathophysiologic basis of the obstruction seems to be related to bronchial hyperreactivity. Increased bronchial hyperresponsiveness was found in 50% of patients in two studies. We tested 26 patients with sarcoidosis; 18 (60%) showed a 20% or greater fall in FEV_1. It is clear that bronchial hyperreactivity occurs in patients with sarcoidosis, but we do not know why. The recent observation of increased levels of C3, C4, C5, and the anaphylatoxins C3a and C4a in alveolar macrophage supernates from patients with active sarcoidosis opens the door for further studies of the relative role of alveolar macrophage-produced mediators in bronchial hyperreactivity and airway obstruction in sarcoidosis.

Severe airflow obstruction rarely occurs in patients with sarcoidosis. In a few reported cases, bullous emphysema and hyperinflation were most likely related to destruction of the alveolar septa and honeycombing rather than pure airway obstruction. In one study in America, progressive airway obstruction was absent in most of the patients. It should be noted, however, that patient selection might be responsible for relatively better prognoses in European series than in American series.

Treatment with corticosteroids usually produces an improvement in vital capacity and FEV_1 but has a minimal effect on the low compliance and diffusing capacity. Corticosteroid therapy seems to benefit patients with bronchial sarcoidosis. Improvement is most likely achieved by suppressing the active macrophage and switching off the production of complement products and anaphylatoxins responsible for increased airway hyperreactivity and airway obstruction.

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α_1-Protease Inhibitor Deficiency and Pulmonary Emphysema

THE protease-antiprotease theory holds that emphysema results from digestion of elastin in areas of the lung subjected to a local excess of elastolytic protease or a deficiency of its inhibitor. This theory originated with two observations reported in the 1960s. One group reported the association between emphysema and a severe, genetically determined deficiency of α_1-protease inhibitor (α_1Pi). Another investigator described an animal model of emphysema resulting from the introduction of proteases into airways. Research over the past two decades supports the hypothesis. Proteases are found on elastic fibers in areas of emphysema. Cigarette smoke oxidatively inactivates α_1Pi, mobilizes excess leukocytes and their elastases to the lungs, causes syntheses of more readily degradable elastic fibers, and directly oxidizes and injures elastin.

Severe α_1Pi deficiency is found in perhaps 1% of patients with clinically significant emphysema. These patients have inherited two so-called Z genes in this highly polymorphic (more than 30 alleles have been described), autosomal codominant system. The PiZ phenotype is seen about once in every 2,000 births in populations of northern European origin. Circulating levels of α_1Pi are reduced to about 15% of those seen in the 95% of persons with the common or so-called PiM phenotype.

Normal and abnormal α_1-protease inhibitors have been synthesized through recombinant DNA and other methods. Therapeutic quantities are being prepared by plasma protein fractionation, and this product has been released as an orphan drug. Plasma levels of α_1Pi can be restored to presumably protective concentrations by weekly intravenous doses of 60 mg per kg of body weight. It is a safe agent as judged by year-long trials in a few patients.

Studies to show long-term clinical effects have not been done; indications for its use are not defined. Initiating therapy early in life is unreasonable because not all with the PiZ phenotype will have clinically significant lung disease. In end-stage disease, correcting a protease-antiprotease imbalance could not reverse severe lung damage. Clinical judgment, therefore, dictates using the drug in patients with early but definite signs of lung injury. There are theoretic reasons to implicate a protease-antiprotease imbalance in other forms of emphysema, but replacement therapy should be restricted to use in those with severe deficiency.

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Radiologic Diagnosis—Chest Imaging

RADIOLOGIC diagnosis in chest medicine continues to be based on the "plain film," or a routine radiograph. Tomography of the mediastinum and lungs has been almost entirely replaced by computed tomography (CT). While most commonly used to screen the mediastinum for enlarged lymph nodes in the staging of lung cancer, CT is nearly ideal for distinguishing vascular structures from other structures or masses in the mediastinum. The requirement for intravenously administered contrast material is a modest limitation, though this causes all of the nonradiologic hazard of the procedure. Magnetic resonance imaging (MRI) in the chest offers less geometric resolution than CT but does not require contrast material to identify blood vessels. Though it is a new and expensive modality, MRI is already established as the safest and most versatile way to image vascular structures. It has the advantage in certain cases of forming clear images in other planes, such as sagittal and coronal, in addition to the transverse plane used by CT.

The most recently accepted technique for imaging the lungs is high-resolution CT. If the x-ray beam is narrowed to only 1.5 to 2.0 mm, compared with the conventional 10.0 mm, the "slice" will show much less volume averaging or blurring of adjacent structures. An edge-enhancing algorithm in the computer helps sharpen the margins of vessels and bronchi. The highest resolution is then obtained by restricting the field of view, which magnifies the image. This technique provides anatomic detail comparable to a naked-eye view of a section of tissue. Details of miliary disease, lymphatic spread of carcinoma, and interstitial fibrosis, for example, are more specific than on chest radiographs or conventional CT scans. Detection of bronchiectasis by CT scan, though still somewhat controversial, is clearly more reliable and convincing than with high-resolution scans. The degree to which high-resolution CT can show abnormalities when a chest film is normal, suggested in recent studies, requires further study.

Computed tomography is an ideal technique for imaging diseases of the pleural space. CT overcomes the difficulty of making radiographs tangential to the region of involvement and easily distinguishes fluid from tissue, such as tumor, fibrosis, or collapsed lung. In cases of asbestos exposure, CT is recognized as more sensitive than radiography, including oblique views, for detecting pleural plaques or in distinguishing them from extrapleural fat. Pleural calcification is much more readily detected by CT. There remains a question of the appropriateness of using this sophisticated and expensive imaging technique for screening, but it cannot be withheld when substantial compensation is at stake.

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Prolonged Outpatient Respiratory Support

PATIENTS who require long-term ventilator support should be cared for in the home whenever possible. For many patients, particularly children, this provides the optimum opportunity for clinical improvement and social development. Further, it has been shown that the care of ventilator-dependent persons can be provided more economically at home.

Mechanical ventilation in the home has been most successful for patients with ventilatory failure due to neuromuscular disease; a small group of patients with severe, stable, chronic lung disease, however, may be successfully managed at home. Patients selected for home mechanical ventilatory support should require no major diagnostic or therapeutic intervention within 30 days of discharge. Blood oxygen tension should be greater than 60 mm of mercury on a fraction of inspired oxygen of less than 40%. Wide fluctuations in arterial oxygen and carbon dioxide tensions should not occur. Patients, except for those managed with negative-pressure ventilators, should have a secure tracheostomy and an active cough and gag reflex and should not require frequent suctioning. They should be free of infection, and medical problems should be stable. They must express a desire to be discharged to home and cooperate in learning the skills required of a ventilator-assisted patient.

Caregivers must be found who have the physical, emotional, and cognitive abilities required to meet the needs of a ventilator-assisted patient. A suitable, safe home environment is necessary, with sufficient space and adequate electrical requirements and a backup power supply.

There must be a primary care physician, medical and pharmaceutical suppliers, a home health agency, and an emergency support system. Sufficient financial resources must be available to cover the total costs of environmental modification, equipment, supplies, and paid caregivers.

Before discharging a ventilator-assisted patient, a thorough evaluation of the patient and resources is done by a skilled team. If the patient and resources are appropriate, an intensive program tailored to the individual patient's needs is initiated. The patient and caregivers are required to show they are able to do all needed care safely outside the hospital environment.

Appropriate arrangements are made with community health agencies, durable medical equipment vendors, and state and local agencies, including the phone company, utility company, fire department, and emergency medical services.

Although a time-consuming process, discharging ventilator-assisted patients is feasible, practical, and rewarding for patients, their families, and the medical team.

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Nutritional Support of Patients With Chronic Lung Disease

PATIENTS with chronic obstructive pulmonary disease (COPD), particularly those with moderate to severe impairment of lung function, are often undernourished. A number of studies have documented a correlation between a decrease in the one-second forced expiratory volume and a decrease in body weight, particularly in patients with emphysema. This often occurs despite a seemingly adequate caloric intake and has been attributed to an increased energy expenditure caused by the increased work of breathing.

Experimental malnutrition has produced a number of effects on the respiratory system, including a blunted ventilatory response to hypoxia and a delayed clearance of lung bacteria. In addition, necropsy studies on underweight patients show that the muscle mass of the diaphragm is decreased. The potential clinical consequences of these findings are evident and include an increased incidence of pneumonia, atelectasis, impaired cough, altered gas exchange, and respiratory failure. Patients with emphysema and weight loss also have an increased mortality rate.

These findings prompt clinicians to institute vigorous nutritional therapy in patients with moderate to severe COPD, although scientific evidence confirming the benefits is sketchy. Nutritional therapy can improve a patient's nutritional status, but the documentation that it can improve lung function or clinical outcome is limited at present. Nutritional therapy for ventilator-dependent patients has been shown to increase the likelihood of successful weaning, but the effects of nutritional therapy on stable patients with COPD are less clear and are under investigation. A recent preliminary report, however, showed that three months of supplemental oral nutrition in poorly nourished COPD patients resulted in decreased breathlessness and increased muscle strength, walking distance, and general well-being. Other studies in malnourished patients with emphysema have shown an improvement in respiratory muscle function after nutritional intervention. Considering the chronic nature of this disease, it is not surprising that nutritional therapy may have only a limited impact. Regardless, malnutrition can be an additive factor to morbidity and perhaps to mortality in this disease, and thus prompts our concern and attention.

The care of patients with COPD should include a careful nutritional asssessment and intervention where necessary, particularly in patients with chronic bronchitis and emphysema in whom malnutrition is more prevalent. Patients with severe lung impairment who are underweight may need a higher caloric intake than expected. Standard formulas for predicting energy expenditure often underestimate their needs. Recent work indicates that the Quebbeman-Ausman predictive equation correlates well with indirect calorimetry in patients with COPD (for men, daily caloric requirement = weight × 12.3 + 754; women, weight × 6.9 + 874; weight in kg). This may require using liquid dietary supplements, including tube feedings for inpatients whose dietary intake may be inadequate. Overfeeding must likewise be avoided because of its obvious consequences. If a patient with severe pulmonary impairment has hypercapnia, care should be taken to avoid a high-carbohydrate nutritional intake that can increase carbon dioxide production and worsen the hypercapnia in these patients. A special liquid formula is available for this use.

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Newer Methods in Sleep Disorders Medicine

SLEEP disorders medicine is a new clinical area dealing with disorders such as the sleep apnea syndrome, periodic leg movements of sleep, narcolepsy, insomnias, and the assessment of impotence. A diagnosis relies on a history and physical examination and also on the ability to record both nocturnal sleep and daytime sleep tendencies. Polysomnography, the laboratory-based recording of sleep, typically includes monitoring an electroencephalogram (EEG), electro-oculogram, and electromyogram to score sleep stages. Additional variables recorded for diagnostic purposes may include respiratory effort and airflow, oxyhemoglobin levels (oximetry), an electrocardiogram, or penile tumescence. Laboratory-based polysomnography also involves simultaneous monitoring by a technician of patient activities and equipment, videotaping for later review, and direct correlation with patient expectations and experiences. Understandably, this is labor-intensive and expensive.

Recent technical advances have allowed for easier and more accurate characterization of certain sleep-related variables. The use of microprocessors has greatly aided the ability to store and analyze data. Computerized programs are available to analyze continuous oximetric data. The programs provide graphic results and an immediate analysis of the number, length, and severity of desaturation events. This technology can be used to screen for sleep apnea and has been particularly useful in the inpatient setting. Computerized analysis of RR-interval variation can also screen for sleep apnea, indicating the severity of cardiac consequences of obstructive apnea. Computer-assisted EEG analysis and sleep stage scoring systems have become commercially available. In theory, these systems provide for efficient storage of information and use of technicians' time. Their cost-effectiveness and usefulness in clinics with various staffing and case-load requirements is not yet certain, however. Using this technology can aid traditional polysomnography and, coupled with daytime alertness testing, allow for an accurate diagnosis, estimation of the severity of a disorder, the impact of abnormal physiologic variables on cardiovascular and neuropsychologic function, and the determination of treatment.

Ambulatory monitoring is becoming more sophisticated, reflecting a need for accurate and inexpensive diagnostic methods. Sleep disorders are common, and large populations that may be undiagnosed, such as hypertensive men who snore, can benefit from widespread screening. Portable systems can be used to diagnose sleep apnea or the periodic leg movements of sleep, but patients whose results show abnormalities often require polysomnography to determine a specific treatment, thus increasing the cost in certain cases.

As microprocessing techniques improve, more physiologic variables can be recorded in the home. For example, several channels of an EEG can be recorded on a cassette tape to detect seizure foci. The wrist movement monitor is a simple method of differentiating wakefulness from sleep and has been validated in clinical studies. Analog or digital techniques can be used to record respiratory effort, electrocardiograms, and movements of the wrist or legs. Although available, home monitoring of oximetry is not widely used but in combination with respiratory measures can add diagnostic certainty. Using microprocessors to evaluate nocturnal penile tumescence holds a future promise for home diagnosis, but this technology is not fully validated. These devices may be best used in combination with laboratory observation to show the association of erections with rapid-eye-movement sleep, to involve the patient in an objective assessment, and to rule out sleep disorders that can themselves cause impotence.

Sleep disorders medicine is a rapidly changing discipline that requires prolonged monitoring of many physiologic variables. In addition to technical advances, clinical decision analyses are evolving to help physicians manage and advise patients who are too sleepy to safely perform activities such as driving a car or working in industry.

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Pulmonary Complications of the Acquired Immunodeficiency Syndrome

PULMONARY complications are a major source of morbidity and mortality in patients with the acquired immunodeficiency syndrome (AIDS). Indeed, a sudden increase in the prevalence of *Pneumocystis carinii* pneumonia in otherwise healthy young homosexual man first alerted the medical community to this disease. The T-cell defect produced by the human immunodeficiency virus leaves these patients prey to numerous opportunistic pathogens and neoplasms that produce pulmonary disease.

Pneumocystis carinii is the major pulmonary pathogen occurring in 60% to 85% of patients with AIDS. The presenting symptoms include fever, cough, and dyspnea (85%), with chills (26%) and pleuritic chest pain (23%) occurring less frequently. A chest x-ray film is usually normal or shows diffuse interstitial infiltrates. Unilateral infiltrates and cavitary disease have been reported in patients with *P carinii* pneumonia. The alveolar-arterial oxygen difference is typically widened—> 15 torr, 92%—and portends a poor prognosis if greater than 25 torr. Although gallium lung scanning, the diffusing capacity for carbon monoxide, and exercise testing may be used for noninvasive assessments, a diagnosis rests on detecting organisms. Tests of induced sputum specimens may be positive 50% of the time, and transbronchial lung biopsy combined with bronchoalvelor lavage has a 95% to 100% sensitivity. Pentamidine isethionate or trimethoprim-sulfamethoxazole, administered intravenously for two to three weeks, remains the mainstay of therapy. Prophylactic studies using nebulized pentamidine aerosol delivered into the bronchial tree are very encouraging. A 15% to 30% mortality is expected with each episode of *P carinii* pneumonia, however.

Other pulmonary infections associated with AIDS include *Cytomegalovirus* (15% to 34%), *Mycobacterium avium-intracellulare* (16% to 21%), *Mycobacterium tuberculosis* (4%), fungal infections (4%), and, most particularly, cryptococcal pneumonia, *Legionella pneumophila* (4%), and *Norcardia.* Because of a B-cell defect, AIDS patients also have a higher incidence of bacterial pneumonias (10%), chiefly caused by *Staphylococcus aureus,* primarily in association with pulmonary Kaposi's sarcoma.

There are also noninfectious causes of pulmonary infiltrates in this patient population. Kaposi's sarcoma is clinically and radiologically indistinguishable from *P carinii* pneumonia and accounts for about 10% of infiltrates. Pulmonary Kaposi's sarcoma is associated with a high mortality rate—88%. Nonspecific pneumonitis, on the other hand, generally carries a good prognosis and may be responsible for as high as 12% of the complications of AIDS.

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Contraindication: Axid is contraindicated in patients with known hypersensitivity to the drug and should be used with caution in patients with hypersensitivity to other H_2-receptor antagonists

Precautions: *General*—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy

2. Because nizatidine is excreted primarily by the kidney, dosage should be reduced in patients with moderate to severe renal insufficiency

3. Pharmacokinetic studies in patients with hepatorenal syndrome have not been done Part of the dose of nizatidine is metabolized in the liver. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

Laboratory Tests—False-positive tests for urobilinogen with Multistix* may occur during therapy with nizatidine

Drug Interactions—No interactions have been observed between Axid and theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450-linked drug-metabolizing enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increases in serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

Carcinogenesis, Mutagenesis, Impairment of Fertility—A two-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa In a two-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high dose males compared to placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups The rate of hepatic carcinoma in the high dose animals was within the historical control limits seen for the strain of mice used The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement compared to concurrent controls, and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive, and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery is not considered evidence of a carcinogenic potential for Axid

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, and the mouse lymphoma assay

In a two-generation, perinatal and postnatal, fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

Pregnancy—Teratogenic Effects—Pregnancy Category C—Oral reproduction studies in rats at doses up to 300 times the human dose, and in Dutch Belted rabbits at doses up to 55 times the human dose, revealed no evidence of impaired fertility or teratogenic effect, but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in one fetus and at 50 mg/kg it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in one fetus There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers—Nizatidine is secreted and concentrated in the milk of lactating rats. Pups reared by treated lactating rats had depressed growth rates. Although no studies have been conducted in lactating women, nizatidine is assumed to be secreted in human milk, and caution should be exercised when nizatidine is administered to nursing mothers.

Pediatric Use—Safety and effectiveness in children have not been established.

Use in Elderly Patients—Ulcer healing rates in elderly patients are similar to those in younger age groups The incidence rates of adverse events and laboratory test abnormalities are also similar to those seen in other age groups. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

Adverse Reactions: Clinical trials of nizatidine included almost 5,000 patients given nizatidine in studies of varying durations. Domestic placebo-controlled trials included over 1,900 patients given nizatidine and over 1,300 given placebo. Among the more common adverse events in the domestic placebo-controlled trials, sweating (1% vs 0 2%), urticaria (0.5% vs <0.01%), and somnolence (2 4% vs 1.3%) were significantly more common in the nizatidine group. A variety of less common events was also reported; it was not possible to determine whether these were caused by nizatidine

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Hepatic—Hepatocellular injury, evidenced by elevated liver enzyme tests (SGOT [AST], SGPT [ALT], or alkaline phosphatase), occurred in some patients possibly or probably related to nizatidine In some cases, there was marked elevation of SGOT, SGPT enzymes (greater than 500 IU/L), and in a single instance, SGPT was greater than 2,000 IU/L. The overall rate of occurrences of elevated liver enzymes and elevations to three times the upper limit of normal, however, did not significantly differ from the rate of liver enzyme abnormalities in placebo-treated patients. All abnormalities were reversible after discontinuation of Axid

Cardiovascular—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in two individuals administered Axid and in three untreated subjects.

Endocrine—Clinical pharmacology studies and controlled clinical trials showed no evidence of antiandrogenic activity due to Axid. Impotence and decreased libido were reported with equal frequency by patients who received Axid and by those given placebo Rare reports of gynecomastia occurred.

Hematologic—Fatal thrombocytopenia was reported in a patient who was treated with Axid and another H_2-receptor antagonist. On previous occasions, this patient had experienced thrombocytopenia while taking other drugs.

Integumental—Sweating and urticaria were reported significantly more frequently in nizatidine than in placebo patients. Rash and exfoliative dermatitis were also reported.

Other—Hyperuricemia unassociated with gout or nephrolithiasis was reported.

Overdosage: There is little clinical experience with overdosage of Axid in humans. If overdosage occurs, use of activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy Renal dialysis for four to six hours increased plasma clearance by approximately 84%.

Test animals that received large doses of nizatidine have exhibited cholinergic-type effects, including lacrimation, salivation, emesis, miosis, and diarrhea Single oral doses of 800 mg/kg in dogs and of 1,200 mg/kg in monkeys were not lethal. Intravenous LD_{50} values in the rat and mouse were 301 mg/kg and 232 mg/kg respectively PV 2091 AMP [041288]

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Soldier being examined for effects of high-altitude cerebral edema.

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CONTINUING EDUCATION Neurology and Neurosurgery Research Fellowship Training, National Institutes of Health.

OUTSTANDING ACHIEVEMENTS Olsen Memorial Fellowship, National Masonic Medical Research Foundation; Albert Schweitzer Fellowship, International Albert Schweitzer Foundation; Harvard Medical School Cabot Prize for Best Senior Thesis; recently published article, "Who Shall Live and Who Shall Die" in Newsweek Magazine.

"The work I'm doing in the Army Reserve fits perfectly with my academic research interests in civilian life. The Army is very concerned with the effects of high-altitude cerebral edema, which is a mirror model of cerebral hypoxia, something I deal with every day in our neurosurgical intensive care unit. I couldn't ask for a smoother transition. And that's true for a lot of Reserve physicians. All we really do is change our clothes, not our mindset.

"Some of the projects the Army is undertaking are on the cutting edge of research. For example, I'm currently involved in developing for the Army a prototype of a non-invasive intracranial pressure-monitoring device that we hope will allow us to measure pressure changes as the brain swells—without drilling holes in the skull. If we can get our design to work, such a device could revolutionize high-altitude medicine as well as civilian neurosurgical care.

"The quality of medicine and the caliber of people I've been associated with in the Army Reserve are, without question, equal to civilian hospitals. In fact, I'm giving serious consideration to applying for an active duty academic position in Army Medicine when my residency ends at Massachusetts General."

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Deteriorating Neurologic Status in a Young Woman with Schizophrenia

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MARGARET GRUNNET, M.D., AND SHUTISH PATEL, M.D.

DR. Mark De Legge. A 38-year-old woman was admitted to the neurosurgical service with a diagnosis of left frontal lobe mass. The patient had displayed psychiatric symptoms six months previously, leading to admission to a psychiatric hospital. Lithium carbonate and perphenazine were administered for bipolar disorder. After discharge, she had begun expressing suicidal ideation and paranoid delusions and was therefore readmitted. At that time, stresses from a recent divorce and a traumatic home situation were noted. Temporary discharge to a crisis center was associated with rapidly deteriorating behavior, including attempts at walking in front of automobiles and roaming nude through the facility. These symptoms prompted readmission to the psychiatric hospital.

She was noted to be a withdrawn, uncooperative woman who had an inappropriate smile. Physical examination proved unrevealing. She answered questions only with the monosyllables "Yes" or "No" and denied any behavioral, affective, or situational problems. She displayed little insight, and she showed impaired judgment. Her hemoglobin level was 10.8 g/dL, and the white blood cell count was 3,100/mm.^{3} The lithium level was 1.2 mEq/L. Ataxic and coarse tremors were noted and were ascribed to lithium. Computerized cerebral tomography (CT), undertaken in the search for organic etiologies, demonstrated a left frontal mass and left lateral ventricular effacement with a shift of the midline. A ring of tissue immediately surrounding the mass showed enhancement after injection of intravenous radiographic contrast medium. Beyond this tissue, the surrounding brain appeared edematous. An electroencephalogram (EEG) demonstrated diffuse slowing of the background brain wave rhythm over both cerebral hemispheres. The patient was transferred to the neurosurgical service of John Dempsey Hospital of the University of Connecticut Health Center.

Admission examination showed a quiet, very thin Hispanic woman who now behaved appropriately. Blood pressure was 120/70 mm Hg, pulse was 74, respirations were 14, and temperature was 37.1° C. The patient's skin contained no lesion, rash, or ecchymosis. Her head showed no evidence of trauma. Pupils were equal and reactive to light, and extraocular movements were intact. The oral mucosa was well hydrated and normal in appearance. The neck was supple. There was no palpable lymphadenopathy. Respiratory examination was normal. Cardiovascular examination revealed normal heart sounds, without murmur or rub. There were no vascular bruits. The abdomen was normal, and liver and spleen were not palpable. Extremities revealed no clubbing, cyanosis, or edema. The patient was alert and oriented. Motor and sensory functions were intact apart from a questionable right pronator drift. Her gait was unsteady, but results of cerebellar testing were otherwise normal, as was the remainder of neurologic examination. The hemoglobin was 10.2 g/dL, the white blood cell count was 4,800/mm^3, and the differential count revealed 64% neutrophils, 21% lymphocytes, 10% monocytes, and 5% band forms. Electrolytes deviated minimally from normal. The blood glucose was 236 mg/dL. Biochemical parameters of renal function, hepatocellular integrity and function, and blood coagulation were normal.

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This case was presented at the Clinico-Pathologic Correlation Conferences of the University of Connecticut Health Center, Shutish Patel, principal discussant.

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Parenteral dexamethasone was administered preoperatively. At craniotomy, a friable left frontal mass was removed. Intraoperatively, the surgeon noted edema of the surrounding brain tissue. The surgical procedure was completed uneventfully. Postoperatively, the patient had normal vital signs, responded to verbal stimuli, and communicated well. The pupils were pinpoint but reactive. The right hand grip was somewhat weak. Packed red blood cells were transfused because the hemoglobin had further fallen, to 7.9 g/dL.

On the first postoperative day, the patient vomited 200 mL of gastric contents but did not suffer clinical aspiration. A persistently elevated blood pressure was treated with nifedipine, with eventual success.

Routine postoperative CT without contrast revealed the expected craniotomy flap and intracranial air. The mass lesion was no longer evident, but changes ascribed to edema persisted.

Dexamethasone was tapered. One observer suspected an expressive aphasia and difficulty with orientation to time; others did not. Lymphopenia was noted on a repeat hemogram. Antibody against human immunodeficiency virus (HIV) was demonstrable by both routine and confirmatory western blot testing. A tuberculin skin test was nonreactive; controls were not placed.

During the next two days, the patient complained of frontal headache. Acetaminophen relieved this. Neurologic examination now demonstrated a right pronator drift, which was blamed on poor cooperation with examination. New fever of 38.4° C was noted, and a midbrain lesion was erroneously added to the differential diagnosis of the pupillary changes.

Initial pathologic review of brain biopsy material showed predominantly necrotic tissue. A mistaken diagnosis of lymphomatoid granulomatosis was made.

The four remaining days of life were marked by high fevers, up to 40.5° C, and by urinary tract infection due to *Escherichia coli,* which was treated. The patient received ampicillin and tobramycin. There was development of a radiographic left lower lobe pulmonary infiltrate, and most prominently, there was neurologic deterioration. This decline began with the patient becoming apathetic, then assuming a fetal position and becoming unresponsive except to pain, despite normal cardiorespiratory function. Focal seizures followed, producing persistent hypertonicity confined to the upper limbs. Muscle stretch reflexes and plantar responses remained intact. Dexamethasone was increased. Phenytoin was added, and later mannitol was administered.

CT now demonstrated multiple scattered hyperlucent (hypodense) areas bilaterally (Figure 1), possibly representing small infarcts, and increased cerebral edema. Decerebrate posturing was followed by loss of all muscle stretch reflexes and bilateral dorsiflexion on plantar stimulation (bilateral Babinski responses).

The infectious disease (ID) service was consulted because of unexplained high fever. ID examination revealed normal skin, oral thrush, onychomycosis, no lymphadenopathy, and no new localizing signs. Lumbar puncture was avoided because the cerebral mass effect might have led to tonsillar herniation. Chloramphenicol was added for empiric therapy of possible bacterial neural pathogens.

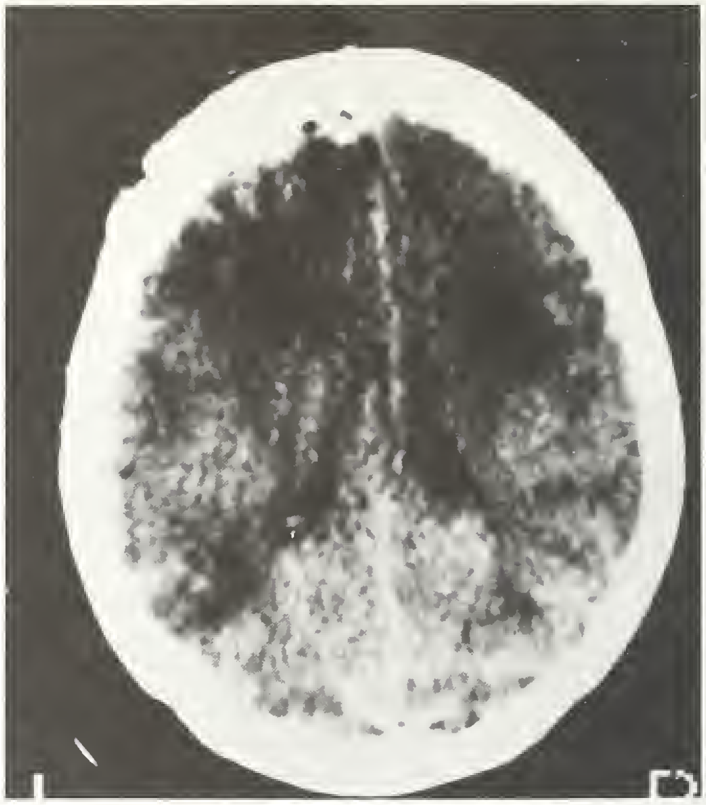

Figure 1

Cross-sectional computerized cerebral tomogram late in hospital course shows multiple necrotizing lesions and diffuse loss of definition of landmarks. Right side corresponds to reader's right; anterior pole of brain is at top.

Pupillary responses worsened. Soon after, bradypnea progressed to respiratory arrest. Endotracheal intubation was required. Following stabilization, the pupils were fixed and dilated, and there was no response to pain. Pressors were required for blood pressure support. EEG showed no activity, and therefore life support was withdrawn.

Dr. Shutish Patel. This young woman presented with psychiatric symptoms and was found to have a left frontal lobe mass on CT. Her illness had begun six months previously with affective symptoms and a change in personality. Suicidal and paranoid ideation were noted. She had become withdrawn, and had displayed impaired judgment and poor insight. Her inappropriate behavior was notable for loss of social graces. The possibility of a structural lesion within the nervous system was suspected and pursued early, although not on initial presentation.

Although there is no isolated symptom characteristic of lesions within the frontal lobes, a combination of deficits such as those present in this patient often allows the distinction of a frontal lobe syndrome.[1] Patients with frontal lobe dysfunction often display bradykinesis, lack spontaneity and drive (abulia), and show affective changes.

Inappropriate jocularity (called *witzelsucht*) and loss of appropriate social graces are common. Among motor abnormalities that may be present are forced grasping, sucking, and rooting responses and a resistance to passive manipulation of the limbs known as paratonia or *gegenhalten*.

A search for the underlying abnormality in patients with frontal lobe syndromes requires consideration of vascular, degenerative, traumatic, toxic-metabolic, and space-occupying lesions. My task has been made easier by the demonstration of a left frontal lobe mass in this patient. On CT, this lesion (Figure I) is a ring-enhancing mass, an appearance characteristic of brain abscess, although a neoplasm such as glioblastoma multiforme or a metastatic tumor could also be responsible. Abscesses caused by hematogenous microbial seeding of the brain are often multiple, as are metastatic tumors. Bacterial or fungal endocarditis may provide the source of such hematogenous seeding and should be considered in a young patient with a brain abscess, particularly in the setting of intravenous drug abuse. These patients may develop so-called mycotic aneurysms from bacterial seeding of the vessel wall. Such aneurysms often bleed and sometimes require surgical extirpation. Among the deep mycoses, cryptococcosis is the most neurotropic, and deserves consideration as a mass lesion even without meningitis. The presence of anemia and leukopenia raises the possibility of infective endocarditis or of an immunosuppressed state. The absence of a heart murmur somewhat decreases the likelihood of infective endocarditis. A brain abscess could have resulted from the contiguous spread of infection from the paranasal sinuses. No such source was apparent here, but as is often the case, it may be difficult to demonstrate.

I am sure these considerations were entertained, and either brain abscess or tumor was thought to be most likely, considering that emergent craniotomy followed. Arteriography would have helped in discriminating between a vascular vs. an avascular mass.

I am impressed by the unexpected flurry of complications that followed what must have been anticipated as a routine diagnostic biopsy. More surprising was the histopathologic finding of a lymphoma-like "vasculitis." Although many varieties of vasculitides affect the central nervous system and can lead to cerebral infarctions, none declares itself as a space-occupying lesion. Therefore, I suspect that although there may have been an inflammatory vascular component, this could not have been the primary abnormality.

This brings me to the most pertinent laboratory abnormality—the AIDS serology—and to a consideration of AIDS presenting with neurologic syndromes. Both enzyme-linked immunosorbent assay (ELISA) and western blot tests were positive for antibody to HIV, indicating exposure to this virus and the possibility of active infection. As experience with the neurologic complications of AIDS has increased, a number of distinct presentations have been recognized, and reviews of this subject have appeared.[2,3] Considering the frontal lobe mass seen in this patient, I will discuss the causes of focal brain lesions in patients with AIDS. The commonest cause of a focal brain lesion in AIDS, accounting for some 50% of such lesions, is cerebral toxoplasmosis.[3,4] Progressive multifocal leukoencephalopathy (PML) consists of lesions within the white matter due to papovavirus infection in the immunosuppressed. Lesions of PML tend to be multiple, and the etiologic agent can usually be demonstrated in pathologic specimens. Several fungi, particularly *Candida albicans* and *Aspergillus* species, may produce brain abscesses in AIDS. This complication typically occurs in the setting of disseminated sytemic infection with the particular pathogen. Bacterial brain abscesses have been alluded to previously. Infection by *Mycobacterium avium—Mycobacterium intracellulare* has been recognized with increasing frequency. Primary brain lymphoma and metastatic Kaposi's sarcoma represent two of the more commonly encountered noninfectious causes of focal brain lesions in AIDS. Primary brain lymphoma has a predilection for the periventricular areas and tends to produce multiple lesions via seeding along CSF pathways. The solitary nature of this patient's initial lesion and its location are atypical for primary brain lymphoma. Finally, brain infarction from nonbacterial thrombotic endocarditis or from varicella zoster virus-related vasculitis could result in a focal brain mass in AIDS.

I think that the most likely process was brain abscess due to *Toxoplasma gondii*. I suspect that the multiplicity of contrast-enhancing lesions observed postoperatively was due to dissemination of *Toxoplasma* trophozoites, with accompanying cerebral necrosis, a pattern well within the biologic behavior of this agent in the immunodebilitated host. In this regard, I should raise the question of the effects that corticosteroids may have played in enhancing disseminated cerebral toxoplasmosis, although clearly the AIDS-associated immune incompetence was overwhelmingly more important in this regard.

Magnetic resonance imaging was not performed in this case, as I understand it. This is unfortunate, because some authors regard this modality as more sensitive than CT in detection and localization, if not definitive diagnosis, of AIDS-associated toxoplasmosis of the brain.[5]

In summary, I believe this patient had AIDS and a left frontal abscess due to cerebral toxoplasmosis. Her terminal complication, in addition to disseminated cerebral toxoplasmosis, was brain edema leading to medullary compression.

Ms. Susan Chlebowski. The medical students' principal diagnosis, on reviewing this case with the chief medical resident, was toxoplasmosis. However, a variety of fungal and other opportunistic infections of the brain were considered major competing differential diagnoses.

Dr. Margaret Grunnet. The brain biopsy showed vast areas of pale coagulative necrosis, including necrotic

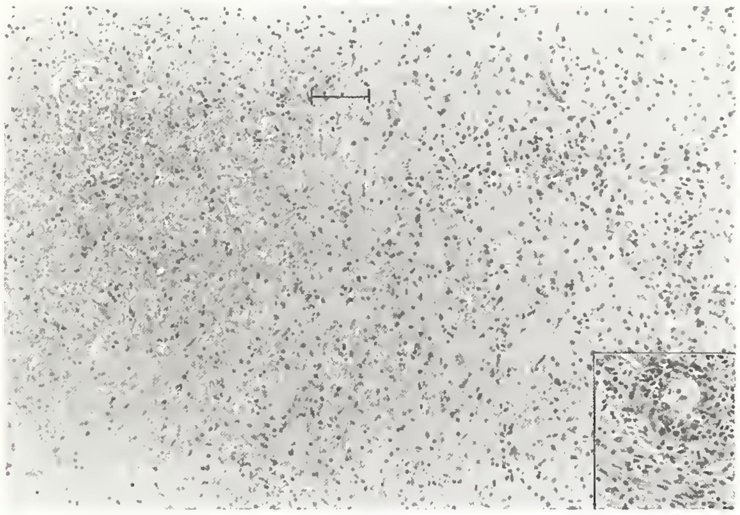

Figure 2

Brain biopsy shows broad zone of necrosis without clear-cut etiology, occupying left half of photomicrograph (hematoxylin and eosin stain, original magnification x 100). Bar indicates 100 μm. Inset (right) shows inflamed blood vessel ringed and infiltrated by various mononuclear cells (hematoxylin and eosin stain, original magnification x 100).

blood vessels within necrotic brain tissue (Figure 2). Vasculitis was present, with microthrombi and several types of mononuclear inflammatory cells in the blood vessel walls. The inflammatory cells included atypical plasma cells, lymphocytes, and histiocytes, leading to a first diagnosis of lymphomatoid granulomatosis. There was also endothelial proliferation in these areas.

Brain cutting at autopsy showed moderate edema, with small uncal grooves and a well-formed cerebellar pressure cone. The left cerebellar hemisphere was softened. Cut surfaces of the brain showed broadening of white matter, with loss of demarcation of grey from white matter, secondary to diffuse edema. There were also multiple pinkish soft lesions in both hemispheres and in all areas of the brain. Some of these corresponded to the hypodensities on the CT, and some apparently had arisen after the last imaging (Figure 3*A*; cf. Figure 1). A very large lesion in the left cerebellar hemisphere and a small one a little superiorly in the right cerebellar hemisphere (Figure 3*B*) apparently compressed the brain stem and were the immediate cause of death.

Microscopic sections of brain from both the biopsy and the autopsy demonstrated necrosis with vasculitis and necrotic blood vessels. In addition, partially encysted toxoplasmal forms and free tachyzoites were seen on both the surgical biopsy and autopsy material (Figure 4). Thus, a diagnosis of *T. gondii* abscesses was made. These organisms can be seen on routine hematoxylin and eosin stains if they are suspected and if the slides are searched meticulously and at length. Oil immersion may assist confirmation of their nature. The large, thick-

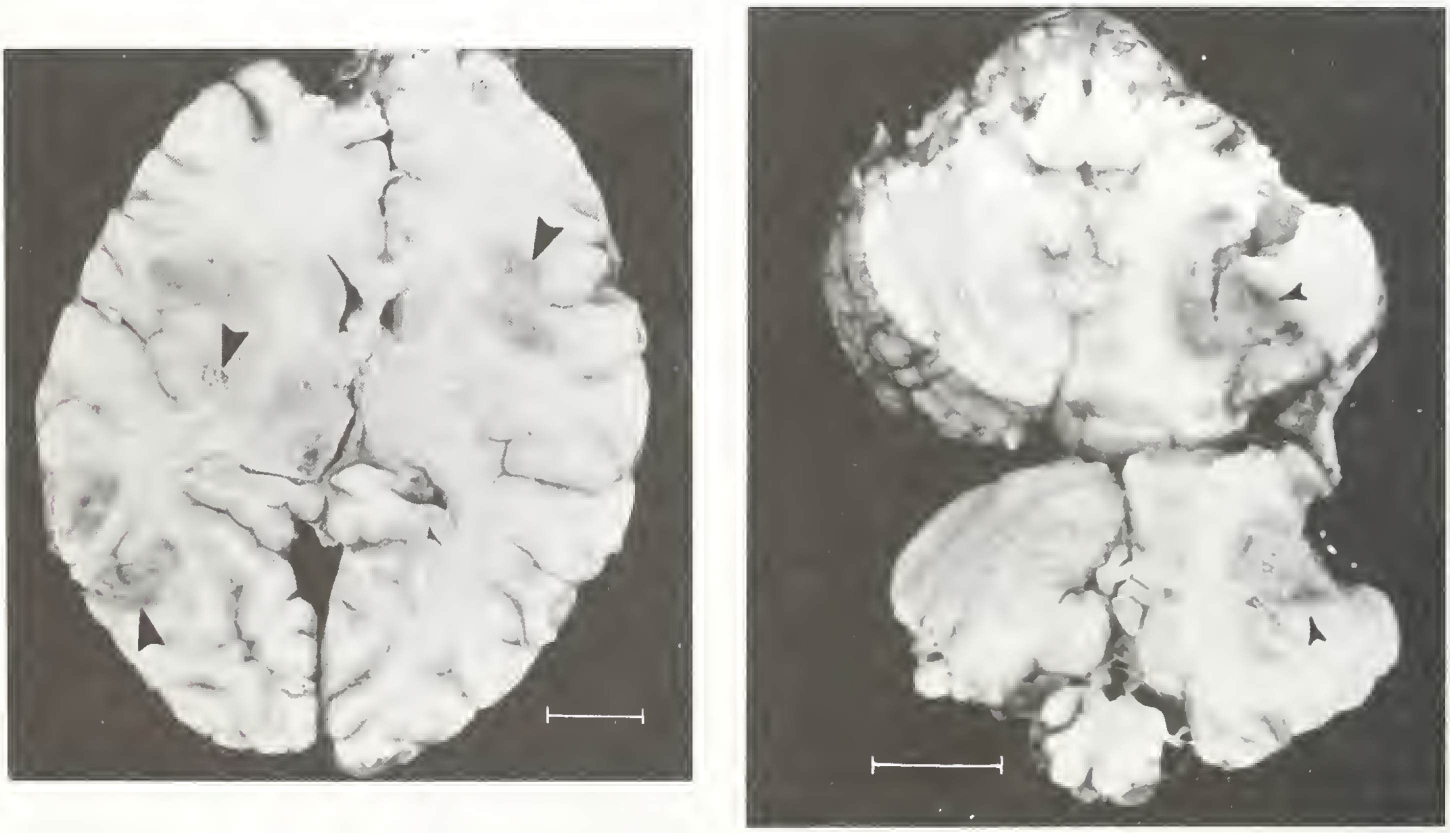

Figure 3

A: Cross-section of brain at level of lateral ventricles confirms numerous necrotizing lesions; three of 10 such lesions visible on this section are indicated by arrowheads. Cf. Figure 1. Orientation here is the same as for Figure 1. Bar indicates 2 cm. *B:* Large lesion in cerebellar hemisphere is prominent; arrows show both halves of lesion, which has been split by dissection. Bar indicates 2 cm.

walled cysts characteristic of chronic toxoplasmosis were not seen.

In some cases, immunoperoxidase staining of tissue has been used to confirm the presence or nature of toxoplasmal organisms when conventional microscopy is unsatisfactory.[5,6] However, it is often possible to identify this protozoan confidently, as in the present case, on routine hematoxylin and eosin-stained tissue.

No evidence of AIDS encephalopathy was present in numerous autopsy slides of the brain.

Dr. Henry Schneiderman. A search for other opportunistic infections was negative. At the time of autopsy, the working diagnosis was lymphomatoid granulomatosis with incidental seropositivity for HIV. According to the Centers for Disease Control's definition of AIDS, the presence of cerebral toxoplasmosis changed the case to frank AIDS because of the presence of a condition at least moderately indicative of an underlying cellular immunodeficiency in the absence of other causes for such an immunodeficiency.[7]

There was extensive purulent pneumonia with focal pulmonary necrosis. The etiologic agent could not be established even with extensive special stains, but the histology strongly implicated a conventional pyogenic bacterial cause typical of the agonal events in patients with severe neurologic debility, independent of immunologic dysfunction. The preserved neutrophil reaction reminded us that AIDS patients differ from those with agranulocytosis. AIDS patients can readily mobilize plentiful polymorphonuclear leukocytes to sites of infection. It is the cell-mediated (mononuclear) immunity that proves so disastrously dysfunctional in AIDS.[8]

Since the histologic response to nonbacterial infections in AIDS may differ from that in other hosts,[8] multiple special stains were employed in searching a variety of organs for extracerebral toxoplasmosis, pneumocystosis, mycobacteriosis, bacterial infection, and mycosis. All proved negative, as did the search for cytopathic (cytologic) changes suggesting other viral infections, such as cytomegalovirus; the last has been common in our autopsy experience of advanced AIDS. There was a minimal cystitis. The bone marrow was histologically normal.

No evidence of malignant lymphoma or Kaposi's sarcoma was found anywhere in the body, including in spleen, lymph nodes, and skin.

The atypia of mononuclear cells in the cerebral lesions was ultimately recognized as a component of the inflammatory reaction to toxoplasmosis, not a lymphoproliferative, plasmacytic, or histiocyte dyscrasia. Nonetheless, review of nonnecrotic portions of the brain biopsy clearly indicated the basis of the original misdiagnosis: a profound, intense mixed inflammatory infiltrate, with permeation of the walls of arterioles and venules, and reactive changes in those vessels. The element that was overlooked was the presence of trophozoites. Indeed, there was a vasculitis, but it related both to infection of endothelial cells with *T. gondii* and to the vasculitic reaction typical of toxoplasmosis.[9] It is intriguing that this brain infection, whose details in AIDS to date seem identical to those in conventionally immunodebilitated hosts such as renal transplant recipients,[4] produces cerebral necrosis disproportionate to the extent of vascular occlusion and, indeed, to the areas most heavily parasitized by the microbe. Toxoplasmal forms are typically readily demonstrable in the most inflamed viable tissue and on the borders with necrotic tissue, but they diminish dramatically in necrotic areas, even with close retrospective study using both conventional and special histochemical stains. The abundant necrosis was still another feature shared with lymphomatoid granulomatosis.[10]

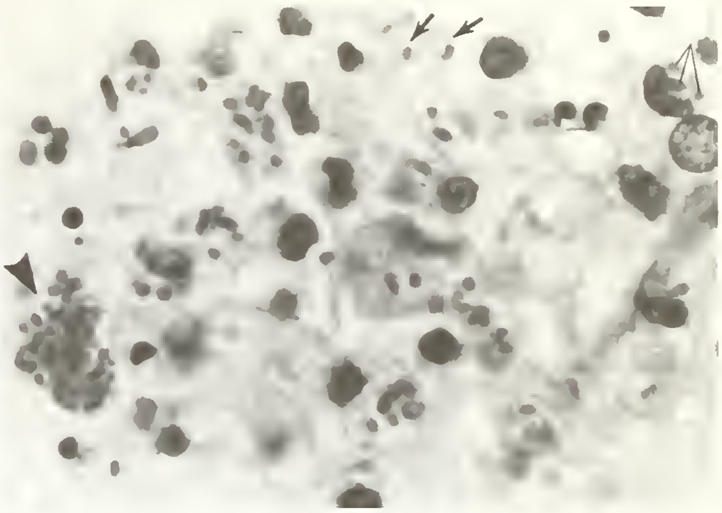

Figure 4

High-power view of biopsy shows intracellular parasites expanding cytoplasm of cells. Trifurcated line points to three tachyzoites in one intact cell. Arrowhead indicates cyst-like dense aggregate of intracytoplasmic *Toxoplasma* forms. Individual *Toxoplasma* tachyzoites have escaped after rupture of many host cells (arrows show representative examples at superior pole of field). Bar indicates 10 μm (hematoxylin and eosin stain, x 1,000).

Dr. Hartwell Thompson. Dementia in a young patient requires serologic study for HIV infection, which is now one of the commonest causes of dementia in young patients in this hospital's population.

Dr. Schneiderman. The eight-month history of clinical symptoms clearly exceeds the time course of cerebral toxoplasmosis. It is likely that the earliest symptoms were psychiatric, and whereas the first traces of toxoplasmosis may have appeared a month before transfer, overt infection likely developed during perhaps the last ten days preceding transfer.

One other correlation was made: the patient's unresponsiveness before her seizures may well have represented akinetic mutism, ie, an inert, silent state in a non-paralyzed, apparently alert individual. This is the extreme form of the frontal lobe abulia[1] to which Dr. Patel referred earlier. Perhaps this worsening reflected the multiplication, bilaterally, and expansion of frontal lobe toxoplasmal abscesses.

Dr. James W. Freston. Why was this patient given a serologic test for HIV infection in the first place?

Dr. Schneiderman. The chart states that this was done as a routine investigation. Routine testing is undesirable. Among other problems, in a low-risk populace many positive tests are false-positive,[11] and the consequences of any positive test are devastating. Furthermore, the test demonstrates antibody, not antigen, thus providing no clear datum on infectivity, although we must assume that every seropositive is infective and must act accordingly. Finally, the presence of antibody tells us nothing about immunity to AIDS and therefore lacks the reassurance value of serologic tests for many other conditions.

Dr. Arnold Katz. The use of a screening serologic test for case discovery recalls the serologic test for syphilis. As was true when that condition was more prevalent, contact follow-up is mandatory.

Dr. De Legge. Useful family and social history were unobtainable. Repeated interviews produced only unreliable, incomplete responses from this troubled patient. There were no known risk factors for HIV infection, but it was suspected that the woman's ex-spouse had abused intravenous drugs. Despite extraordinary efforts, contacts could not be traced.

Dr. Freston. Each generation has a disease from which it learns much of medicine. This outlook is embodied in the adage, formerly much in use, "When you know syphilis, you know medicine." It looks to me as though AIDS is serving a parallel function for us today. Certainly it is reteaching us humility about the powerlessness of our profession in some settings and reminding us of the need to help patients with their dying when we can do nothing else. AIDS is thus reawakening, for some of us, the practice of the art of medicine.

Dr. Schneiderman. The particulars of antimicrobial therapy reflected the primary service's decisions, based in part on recommendations of their consultants in infectious diseases. Of note, the surgical pathologist's misreading of the brain biopsy as lymphomatoid granulomatosis led to relatively premature diagnostic closure and provided an erroneous, misleading explanation, which nonetheless appeared to account for the clinical scenario. Hence, antibiotics figured less prominently in early management of the postoperative course. Although the outcome could hardly have been prevented, this mistake underscores that no datum, including a histopathologic diagnosis, is infallible. Thus, diagnostic reasoning and management require open-mindedness and alertness to changes in the total clinical picture.

The final pathologic diagnoses were, then, acquired immunodeficiency syndrome with permeative multifocal cerebral and cerebellar toxoplasmosis (with brainstem compression) and with pyogenic pneumonia, extensive and apparently bacterial.

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Prevention and Treatment of Kidney Stones

NATIONAL INSTITUTES OF HEALTH

Introduction

RENAL stone disease (nephrolithiasis) accounts for about seven to ten out of every 1,000 hospital admissions in the United States, and has an annual incidence of seven to 21 cases per 10,000 persons. Four of every five patients with stones are men, and in both sexes the peak age of onset is between 20 and 30 years, so people are affected during years of prime adult life. The majority of stones, 70% to 80% are composed mainly of calcium oxalate crystals; the rest are composed of calcium phosphate salts, uric acid, struvite (magnesium, ammonium and phosphate), or the amino acid cystine. Occasionally, stones injure kidneys and reduce their function by causing infection or obstruction, but many patients with stones suffer only from the pain of stone passage, urinary infection, and bleeding, which is worrisome though not in itself dangerous, and the inconvenience of hospitalization and discomfort of urological procedures. In essence, nephrolithiasis is a common cause of morbidity rather than of death or renal failure.

The diagnosis of nephrolithiasis is not difficult in most patients. The pain of stone passage, called renal colic, has easily recognized characteristics including location in the flank, sudden onset, extreme severity, radiation down the abdomen toward the groin, association with hematuria, and urinary symptoms of frequency, urgency and dysuria, and relief immediately following stone passage. Stone passage itself or radiographic evidence of the stone and its attendant urinary obstruction make the diagnosis certain.

A stone can form only when urine is supersaturated with respect to its constituent crystals. Supersaturation means that the concentration of a stone forming salt, such as calcium oxalate, exceeds its solubility in urine. Urine of most normal people is supersaturated with respect to calcium oxalate, so—in principle—all people can form such stones. Normal urine is not supersaturated with respect to uric acid, cystine or struvite. Conditions that raise calcium oxalate supersaturation raise the risk of calcium oxalate stones. Hypercalciuria and hyperoxaluria are two main clinical examples, and both can result from many diseases. Hyperparathyroidism, renal tubular acidosis, sarcoidosis, vitamin D intoxication, and "idiopathic" hypercalciuria all are causes of hypercalciuria. Hyperoxaluria may be due to overproduction, from hereditary disorders of metabolism, or be acquired from intestinal disease or diet.

Apart from overexcretion, supersaturation can be increased by abnormal interactions between urine ions. Urine citrate forms a soluble salt with calcium that normally reduces free calcium ion levels appreciably; low urine citrate from bowel disease, renal tubular acidosis, and, perhaps, dietary and hereditary causes can raise calcium oxalate supersaturation and promote stones. Normal women excrete more citrate and less calcium than normal men, perhaps a reason why men form stones more often. Low urine pH from hereditary causes or bowel disease promotes uric acid stones; high pH, from alkali, drugs, or renal tubular acidosis increases calcium phosphate supersaturation. Struvite supersaturation occurs only when urine is infected with microorganisms that possess urease, and are rightly called "infection" stones. Cystine stones occur only in cystinuria, a hereditary disorder of amino acid transport.

Supersaturation creates stone crystals by causing ions in solution to combine with one another into a solid phase, a process called nucleation. Calcium and oxalate ions can orient themselves on surfaces of another crystal, such as uric acid, and such heterogeneous nuclei may promote calcium oxalate stones. Hyperuricosuria, from dietary purine excess or from endogenous overproduction, and low urine pH, can promote stones that are pure uric acid, or mixed calcium oxalate—uric acid stones; hyperuricosuria can promote seemingly pure calcium oxalate stones. Other heterogenous nucleators may be urine proteins, Tamm-Horsfall protein, the urothelial surface itself, and other crystals.

The disorders that raise supersaturation, and promote heterogeneous nucleation are the presently accepted causes of nephrolithiasis; their diversity, and the diversity of their current treatments complicate clinical man-

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From the Office of Medical Applications of Research, National Institutes of Health, Bethesda, Md.

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agement of patients, and offer many opportunities for fruitful research. At the same time, there are other factors that may influence stone forming propensity, such as inhibitors of calcium oxalate crystallization and urothelial surface properties that affect crystal retention; variations of inhibitors and urothelial surface properties may partly explain why only a small fraction of people form calcium oxalate stones even though urinary calcium oxalate supersaturation is almost universal. Assessment of inhibitors and urothelial surface properties are not yet applicable to clinical practice, but may eventually transform it.

New instruments and techniques have improved and simplified the treatment of stones in the kidney or urinary tract. Percutaneous techniques permit surgeons to extract or disintegrate stones that as recently as five years ago could be treated only by conventional surgery. Open surgery now is required for treatment of less than 5% of the patients. The extracorporeal shock wave lithotriptor was introduced into U.S. practice in 1984; it can disrupt stones into fragments that can be passed with the urine, elminating the need for most invasive surgery. Worldwide, over 500,000 patients have been treated with this instrument since 1980. These breakthroughs have reduced the risk of stone removal and have affected public assessment of the benefits of medical stone prevention, complicating the question of what is the best way to evaluate and treat patients.

Given the natural complexity of this common disease, the great changes that new technology has made in surgical practice, and the exciting prospects offered by recent scientific discoveries, the National Institute of Diabetes and Digestive and Kidney Diseases and the Office of Medical Applications of Research of the National Institutes of Health convened a Consensus Development Conference on the Prevention and Treatment of Kidney Stones on 28-30 March 1988. After a day and a half of presentations by experts and discussion by the audience, a consensus panel drawn from specialists and generalists from the medical profession and related scientific disciplines, clinical investigators, and public representatives considered the evidence. The panel agreed on answers to the following key questions:

1. What are the methods of medical prevention, and how successful are they?
2. What is the role of lithotripsy, and can it replace medical prevention?
3. What are clinical and laboratory approaches for the evaluation of patients with stones?
4. What are the directions for future research?

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1. What are the Methods of Medical Prevention, and How Successful are They?

Current medical treatment will not dissolve most stones. Rather it is aimed at inhibiting stone growth and preventing formation of new stones. Medical treatment can be divided into specific and nonspecific. The nonspecific treatment used in all patients with stones is increased fluid intake. Specific treatment regimens are directed to the particular type of stone that is being prevented.

Nonspecific Treatment

Increased fluid intake increases the urinary output, thereby lowering the concentration of the substances involved in stone formation. Although there is no controlled clinical study that examines the effectiveness of an increase in fluid intake, historical data strongly suggest that hydration is effective in preventing stone formation. While strict guidelines are not available, a doubling of the urinary output or a 24-hour urinary output of greater than 2 L is generally recommended to reduce new stone formation. In actual practice, however, the beneficial effects of hydration may be seen with much less increase in urinary volume.

Specific Treatments

Calcium Oxalate Stones

Calcium oxalate stones may be either “idiopathic” or the result of a specific metabolic abnormality, such as hyperparathyroidism, sarcoidosis, renal tubular acidosis or primary hyperoxaluria, which together account for less than 10 percent of all calcium oxalate renal stones. Treatment of stones caused by specific diseases rests upon the correction of the underlying disease condition, for example, parathyroidectomy for patients with primary hyperparathyroidism.

For patients with idiopathic calcium oxalate stone disease, treatment is directed toward mechanisms that will reduce abnormal urinary metabolite excretion. Stone disease in these individuals is the result of increased urinary calcium, oxalate, or uric acid excretion, or decreased urinary citrate excretion, or abnormal urinary pH. Contrary to earlier beliefs, it is becoming clear that most patients have more than one abnormality of urinary metabolite excretion. Hypercalciuria, an increase in urinary calcium excretion, is the commonest abnormality seen in these patients. Hypercalciuria is almost invariably the result of increased intestinal calcium absorption. Abnormalities of vitamin D metabolism, renal handling of calcium, and bone turnover may also be found in hypercalciuric patients. Hypercalciuria can be familial.

This condition is generally treated by both counseling against certain dietary excesses, and by drug administration. Patients are advised against a calcium intake of more than 1g per day, and a high sodium intake. The most commonly used drug treatment consists of thiazide diuretics, which reduce renal calcium excretion. High salt intake lessens the effectiveness of thiazides and generally increases calcium excretion. Other drug treatments not yet evaluated in double-blind and prospective studies are cellulose phosphate, which binds calcium in the gut, and orthophosphate, which may reduce intestinal calcium absorption and urinary calcium phosphate crystal formation.

A second abnormality associated with calcium oxalate stone is increased urinary uric acid excretion. It is not clear why this might predispose to formation of calcium oxalate stones, but one mechanism may be the deposition of calcium oxalate crystals upon uric acid crystals. Hyperuricosuria may either be isolated or associated with hypercalciuria. Treatment is with allopurinal, an agent that reduces uric acid excretion, and with restriction of excess purine and animal protein intake.

A third metabolic abnormality, detected with increasing frequency in recent years, is hypocitraturia, a decrease in urinary citrate excretion. Citrate binds calcium thereby decreasing the calcium oxalate concentration in the urine. This condition is best treated with citrate supplementation.

Although urinary oxalate concentration does influence calcium oxalate supersaturation more than a proportional increase in urine calcium would, urinary oxalate levels are only slightly elevated in most patients with idiopathic calcium nephrolithiasis. The clinical significance of this mild hyperoxaluria is unclear, as is the effectiveness of available treatment, which consists of counseling to reduce excessive dietary oxalate intake. Since oxalic acid is a metabolic by-product of vitamin C, there has been concern about excess intake of vitamin C, above 0.5 or 1.0 g per day; but evidence that this promotes stone formation is very limited.

The efficacy of thiazide therapy for preventing stones by lowering urine calcium excretion, and of allopurinol therapy for preventing calcium oxalate stones due to hyperuricosuria has been demonstrated in a limited number of randomized controlled trials. Specific drug therapy appears to reduce stone recurrence rates by half. Even though hydration and dietary restrictions are widely accepted by experts in the field, their efficacy and that of citrate and phosphates have not been tested by randomized controlled trials. A difficulty in evaluating studies that do not contain randomized concurrent controls is that the natural history of idiopathic calcium oxalate stone disease has not been well documented. Limited evidence to date suggests that approximately 60% of patients presenting to their physician with symptomatic stones for the first time will not form another stone for ten years (the so-called "stone clinic effect"). In the absence of randomized controlled trials, claims of success in stone treatment must be evaluated cautiously. On the other hand, the majority of clinical studies of treatments of stone disease, which have not employed the randomized, double-blind design, should be carefully considered, especially those showing a treatment effect greater than the 60% stone clinic effect. Better definition of the side effects of medical treatment is needed.

Uric Acid Stones

Uric acid stones are formed in patients with a persistently acid urine and/or massively increased urinary uric acid excretion (greater than 1,000 mg per day). Initial treatment is alkalinization of the urine with agents such as bicarbonate or citrate. Patients with recalcitrant uric acid stones may be treated with allopurinol, in addition. Reduction of dietary purine intake is also widely recommended.

Infection Stones

These stones are formed in the presence of infection by urea-splitting organisms. The most effective treatment must include complete removal of the stone(s) and appropriate antibacterial therapy. In patients who are not candidates for surgical treatment, randomized controlled trials have shown that chronic antimicrobial therapy together with urease inhibitors such as acetohydroxamic acid are effective, but limited in usefulness by side effects.

Cystine Stones

These stones occur in patients with the inherited transport disorder, cystinuria. Medical treatment lies in reducing urinary cystine concentration by hydration, by increasing cystine solubility using alkalinization, and by lowering urine cystine concentration with agents such as d-penicillamine or thiola.

2. What is the Role of Lithotripsy, and can it Replace Medical Prevention?

Extracorporeal shock wave lithotripsy (ESWL) has become widely used for the treatment of renal stone disease and is based on the use of shock waves to break up kidney stones so that they can be passed through the ureter.

Lithotripsy has proven to be effective for removal of renal stones less than 2 cm in diameter, which constitute the majority of the cases. The morbidity of ESWL is less than that of percutaneous nephrolithotomy. For kidneys containing only single stones, treatment success defined as kidneys that are made stone free or left with only asymptomatic residual fragments, compares well with percutaneous nephrolithotomy, except if lower-pole stones greater than 1 cm are present, as they are in 20% of these patients. Stone-free rates for kidneys with multiple stones are lower than for kidneys with only one stone.

For patients with stones larger than 2 cm—infected or not—combined techniques of ESWL and percutaneous nephrolithotomy tend to produce better results. Initial percutaneous nephrolithotomy followed by ESWL and a "second look" percutaneous nephrolithotomy give the best results. In treatment of infected stones, removal of all stone fragments and appropriate antimicrobial therapy are essential to prevent stone recurrence. For the small group of patients with large infected staghorn calculi, complex anatomy, or obstruction, open surgery may be the recommended course. The complexity of treating large stones—greater than 2 cm, infected or not—requires that *such* patients be managed in settings where ESWL, percutaneous nephrolithotomy, and conventional surgery are all available.

In regard to the use of ESWL for treatment of patients with small (less than 5 mm) stones that are incidentally discovered and cause no symptoms, treatment is not universally recommended, but additional data are needed in this area. Current practice relies upon the evaluation of individual patients.

With regard to ureteral stones, spontaneous passage is ideal. If spontaneous passage seems unlikely, or unduly delayed, ESWL is best for stones in the upper two-thirds of the ureter, whereas endoscopic techniques remain best for lower ureteral stones. Ureteropelvic junction obstruction or other obstructions, or stones in calyceal diverticulae, may be best managed by endourological methods. Cystine stones are best treated by percutaneous nephrolithotomy.

Since ESWL is relatively new, the long-term effects of this therapy are unknown. Concerns relative to the effects on kidney function, adjacent tissues and organs, increased new stone growth, and subsequent diseases, such as hypertension, will require long-term evaluation. Caution in regard to levels of energy used is necessary, and guidelines need to be established and implemented for single treatments, frequency of treatments, as well as for cumulative doses. ESWL treatment should be used with caution in children.

Lithotripsy cannot replace medical prevention. Rather, surgical and medical therapy are complementary approaches. Medical therapy prevents recurrence, is efficacious (see question one), avoids renal colic, reduces the need for surgery, may correct extrarenal manifestations of systemic disease, and is cost-effective. It is particularly important for patients with stones, whether treated with lithotripsy or not, to receive continuity of medical therapy and monitoring at regular intervals to prevent or delay recurrence.

3. What are Clinical and Laboratory Approaches for the Evaluation of Patients with Stones?

Clinical and laboratory evaluation of the patient should allow insight into the type, extent, and intensity of nephrolithiasis.

The approach to the evaluation of patients with stones depends upon the initial presentation; only a basic evaluation is undertaken for the initial stone former. Multiple stones or recurrent disease require more complex evaluation.

In all patients, every effort should be made to collect and analyze all stone material. Although conventional analysis has relied upon polarization microscopy, evaluation by x-ray crystallography and, if necessary, infrared analysis promise to provide greater analytical precision in the future.

The basic evaluation begins with a history and identification of any possible medical or environmental risk factors for stone disease. History may disclose evidence of familial stone disease and allow some estimation of prior stone frequency. History and physical examination may reveal evidence of malignancy, skeletal disease, inflammatory bowel disease, intestinal bypass, urinary tract infection, and will allow identification of environmental factors known to modulate the expression and severity of stone disease. Such factors include fluid intake or restriction, urine volume, climate, geographic variables, occupation, immobilization, diet, and medication. The basic laboratory examination includes urinalysis; urine culture if clinically indicated; and blood chemical profile including calcium, phosphorus, uric acid, electrolytes and creatinine. A urine aliquot should be obtained for qualitative cystine screening when stone composition is unknown. Overtly hypercalcemic patients should undergo parathyroid hormone assay. KUB and intravenous urography should be performed in every patient, unless contraindicated. This will identify urinary tract obstruction and allow definition of existing stones as well as collecting system anatomy. Renal tomograms are ideal for visualizing stones, when practical and indicated.

Metabolically active stone formers are defined as those who have formed or who have passed a second or multiple stones within a one-year follow-up period, or have growing stones. These patients and all children with renal calculi deserve further scrutiny. Their further laboratory evaluation should include a 24-hour urine collection for analysis of volume, calcium, sodium, uric acid, oxalate, citrate, pH, and creatinine. Twenty-four hour urinary creatinine excretion is measured to assess adequacy of the urine collection. Follow-up 24-hour urine collection is required to monitor patient compliance and effectiveness of treatment.

Specialized testing is not recommended for most patients. Occasionally, provocative acid-loading tests, oral calcium deprivation and loading studies, determination of urinary inhibitor concentration, calculation of urinary saturation indices may be indicated. N-terminal PTH assay or immunoradiometric parathyroid hormone evaluation may be indicated in patients with high-normal or marginally elevated serum calcium levels.

4. What are the Directions for Future Research?

The Consensus Development Conference on the Prevention and Treatment of Kidney Stones has provided an overview of the current state of knowledge on the etiology, pathophysiology, and medical and surgical management of nephrolithiasis. Numerous unresolved issues were discussed, demonstrating the need for additional basic and clinical research. Some of the questions posed have been the subject of previous studies, but fundamental issues remain unresolved. The solution to these questions will require collaborative endeavors between basic scientists and clinicians.

Randomized controlled clinical trials are necessary to assess methods of medical and surgical treatment that have not been so evaluated. Long-term follow-up studies are needed to assess the safety and efficacy of both medical and surgical therapy of nephrolithiasis.

Basic Research

1. What are the mechanisms and sites of initial crystal formation and retention? Can the role of the renal cell in these processes be defined?
2. What are the mechanisms of action of inhibitors and promoters on crystal formation and growth, and on stone nucleation and maturation?

3. What are the biochemical characteristics, genetic modes of regulation, and mechanism of action of macromolecular inhibitors and promoters of crystal formation? Are abnormal molecules produced in patients with genetic disorders?
4. Can appropriate animal models be developed for studies on ESWL effects and the pathogenesis of human nephrolithiasis?
5. Is there a genetic basis for idiopathic nephrolithiasis? Using genetic probes, can individuals at risk be identified? For defined genetic disorders, (eg, cystinuria, renal tubular acidosis), will gene therapy have practical application?
6. Are the enzymes involved in $1{,}25(OH)_2D_3$synthesis, and the receptors for parathyroid hormone and $1{,}25(OH)_2D_3$action useful sites of attack for new therapeutic agents? Will their molecular characterization be helpful in designing new inhibitors?
7. What are the biochemical and molecular biological characteristics of ion transporters relevant to the pathogenesis of nephrolithiasis? Can their activity be regulated?
8. What are the fundamental mechanisms of oxalate synthesis, absorption, and transport?
9. Are there in vitro or animal model studies with ESWL that would be useful in characterizing the potential risks for cellular and tissue damage in man?
10. Are there improvements possible in the physics and technology of ESWL that can reduce tissue injury?

Clinical Research

1. What are the fundamental mechanisms of idiopathic hypercalciuria? Is renal tubular dysfunction involved in the pathogenesis of stones? Can individuals at risk for nephrolithiasis be identified? Why does stone disease predominate in men?
2. What is the optimal duration of drug therapy in recurrent calcium stone formers? Are patients at decreased risk for recurrent stone episodes after several years of therapy? Are there new agents that could increase calcium reabsorption in the kidney without producing the known side effects of thiazides?
3. Is there subclinical bone disease in patients with idiopathic hypercalciuria? Does thiazide therapy alter bone mineral content?
4. What are the biological effects of ESWL on the kidney and surrounding tissues such as the liver or pancreas? Are those patients who have received ESWL treatments at greater or lesser risk for recurrent stone disease years after treatment? Are there altered effects on membrane physiology (eg, renal tubule or epithelium)? Is hypertension a complication of ESWL, and if so, how do we prevent it? Are there other effects on the kidney and what are the best renal function tests to assess this issue? Should an asymptomatic stone be treated with ESWL?
5. Can better chemolytic agents for stone fragment removal be developed?
6. What is the potential role of vitamin D antagonists in treating calcium stone disease?
7. Can new drugs be developed to alter oxalate synthesis or metabolism? What are the effects on stone formation of reduction of urine oxalate?
8. Can safer inhibitors of urease be developed?

Conclusions

Nephrolithiasis is a chronic illness that requires an integrated combination of medical and surgical care; the first is concerned mainly with prevention of recurrent stones, the latter mainly with the removal of existing stones.

A small fraction of patients have calcium oxalate stones due to specific disorders such as primary hyperparathyroidism, renal tubular acidosis, and primary or acquired forms of hyperoxaluria. Treatment of patients with these disorders or of patients who have uric acid or cystine stones is not controversial and is effective in preventing recurrence.

The majority of patients, 80%, form calcium oxalate stones not due to specific diseases but to idiopathic hypercalciuria, mild hyperoxaluria, or hypocitraturia. Thiazides and allopurinol, as treatments of idiopathic hypercalciuria and hyperuricosuria, respectively, have been effective in controlled trials. Although hydration, dietary counseling to reduce oxalate or calcium intake, and oral citrate have not yet been tested adequately, virtually all physicians recommend hydration to patients who form stones.

New techniques and instruments, percutaneous nephrolithotomy, and extracorporeal shock wave lithotripsy (ESWL) have greatly improved removal of stones. ESWL seems an excellent treatment for small, uninfected stones, less than 2 cm in diameter. Larger stones or infected stones are best treated in clinical settings that offer both ESWL and a comprehensive array of percutaneous and open surgical procedures. Potential long-term adverse consequences of ESWL are not yet defined.

All patients who form stones should be evaluated to detect treatable causes and to prevent recurrence. Complete clinical history, physical examination, urinalysis, analysis of all available stone material, intravenous urogram (IVP), urine culture, a routine cystine screening, and a multitest blood profile comprise the minimum evaluation appropriate for patients with only a single stone. Patients who have formed multiple stones should also have assessed their 24-hour urine excretions of calcium, oxalate, uric acid, sodium, citrate and creatinine, and urine pH. The outcome of treatment should be evaluated clinically and by appropriate follow-up measurements.

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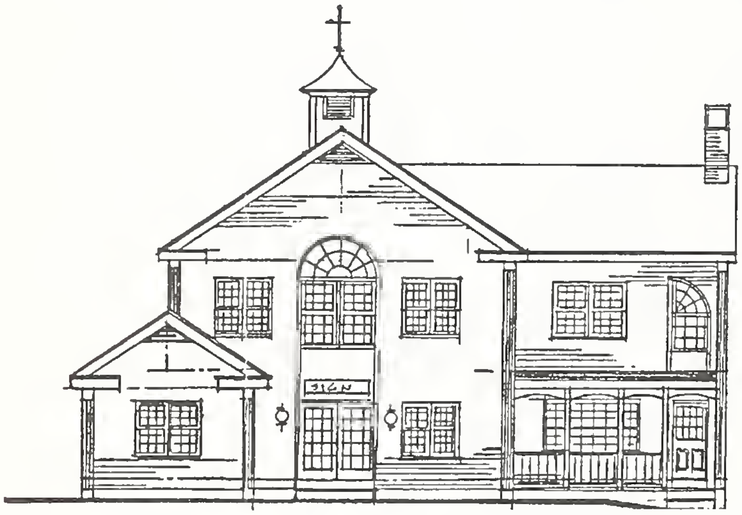
The conference was sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases, Philip Gorden, M.D., Director; and NIH Office of Medical Applications of Research, William T. Friedewald, M.D., Acting Director.



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Medical Education in the United States, 1960-1987

PAUL JOLLY, Ph.D.

MEDICAL education in the United States has reached a turning point. While biomedical research and patient care activity continue to grow, the rapid increase in enrollment of medical students experienced during the last quarter-century has ended. This DataWatch describes trends in allopathic medical education since 1960 and the state of academic medicine today. Some problems and concerns of participants in medical education also will be described.

Many of the data on which this DataWatch is based are published annually in the medical education issue of the *Journal of the American Medical Association,* prepared jointly by staff of the Association of American Medical Colleges (AAMC) and the American Medical Association (AMA).[1] Other data for which references are not given are based on data files maintained by the AAMC and available upon request.[2]

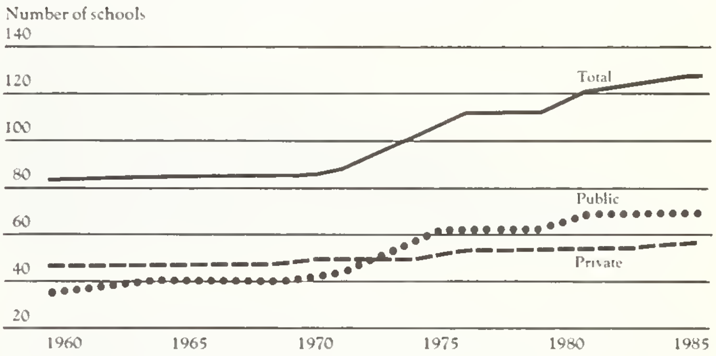
Growth in U.S. Medical Education

At the beginning of the 1960s, medical education institutions began to respond to a national consensus that there was a shortage of physicians. This consensus was reflected and reinforced by federal legislation providing financial support for medical education. State and private efforts increased materially, and there began a period of substantial increase in capacity that is only now coming to an end.

Medical schools. The founding of a new medical school requires several years for planning, collection of the necessary resources, and recruitment of faculty and staff, before the charter class can be admitted. Ordinarily, advice is sought at an early stage from the Liaison Committee on Medical Education, which has the responsibility for accreditation of all medical schools in the United States and Canada. Provisional accreditation usually is granted before the first class is enrolled, and full accreditation normally is given just before the first degrees are awarded.

Exhibit 1 shows the growth in institutions over the past twenty-seven years. In 1960-1961, there were thirty-seven public and forty-four private, fully accredited, four-year medical schools in the United States, including the University of Puerto Rico. New schools were fully accredited in West Virginia, Kentucky, and New Mexico during the 1960s, including two new institutions in Puerto Rico. The last school to receive full accreditation was Mercer University School of Medicine in Macon, Georgia, which admitted its first class in 1982. Thirty-three of the forty-five new medical schools were public, reversing the balance of private over public institutions that existed in 1960.

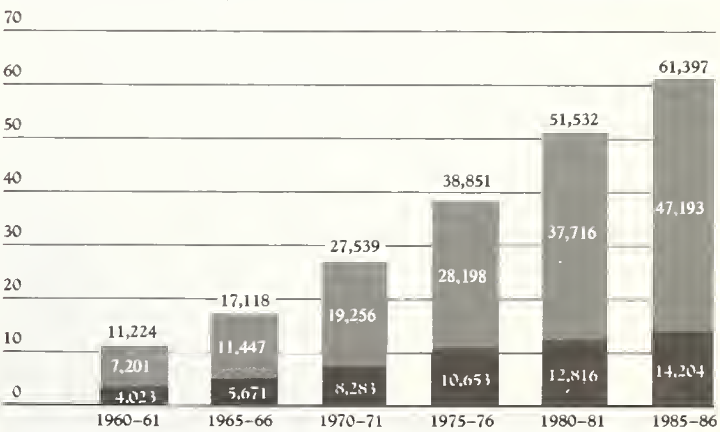
Exhibit 1
Accredited United States Medical Schools, 1960–1985



Source: Liaison Committee on Medical Education.
Note: Osteopathic schools, currently numbering fifteen, are not included.

Faculty. Exhibit 2 displays the growth in faculty over the twenty-five-year period ending in 1985-1986. While the number of schools increased by 56%, the number of faculty grew to five and one-half times its 1960-1961 size. Basic science faculty numbers grew at a compound rate of 5% annually, and clinical faculty numbers grew at a compound rate of almost 8% per annum. Such growth

Exhibit 2
Number Of Full-Time Faculty Members In Medical Schools, 1960–1961 Through 1985–1986



Source: Association of American Medical Colleges.

PAUL JOLLY, PhD, who holds a doctorate in physics from Harvard University, is associate vice-president for operational studies at the Association of American Medical Colleges in Washington, DC. He has been at the AAMC since 1972.

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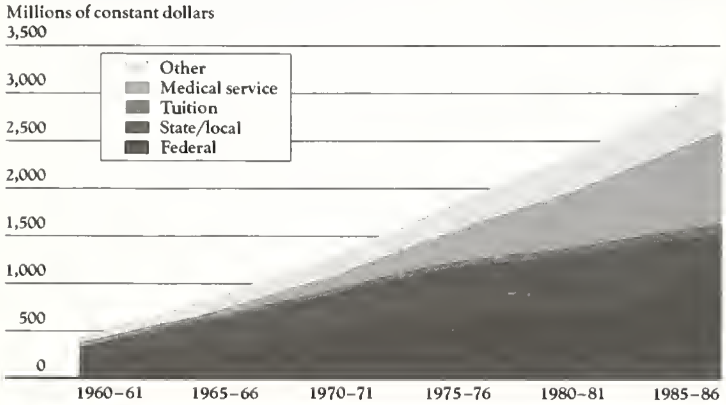
was stimulated not only by the push to increase enrollments, but by the rapid growth in a national commitment to biomedical research, carried out in large part in medical schools, and by increasing patient service responsibilities of the academic medical centers.

Revenues. Exhibits 3 and 4 display the growth in medical school revenues and distribution by source. Looking first at the total revenue line, it is clear from Exhibit 4, which is adjusted for inflation, that the growth in revenues has greatly exceeded increases in consumer prices. Total revenues in 1985-1986 were $11.096 billion, a twenty-fivefold gain over 1960-1961. In constant dollars, the current figure is seven times as great as at the beginning of the period.

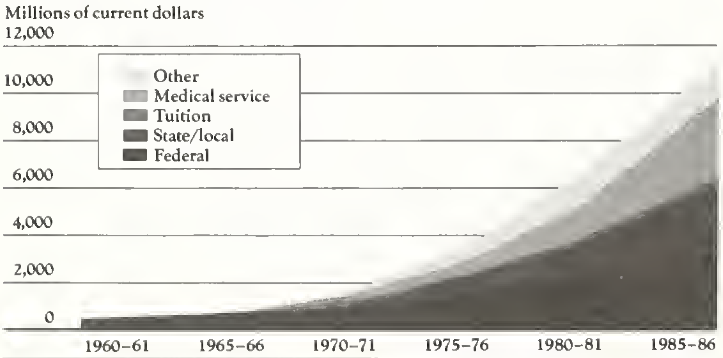
Exhibit 3
Distribution Of Sources Of Revenue For Medical Schools, Millions Of Constant (1960) Dollars, 1960–1961 Through 1985–1986



Source: Association of American Medical Colleges.

These exhibits, especially the inflation-adjusted Exhibit 4, demonstrate clearly the change in the balance of funding for medical schools. Federal contributions in the early 1960s fueled the growth, with federal funds making up over half of medical school revenues in 1965-1966; most of these funds were provided in support of an expanding commitment to biomedical and behavioral research. While revenues from federal sources have continued to increase, they have declined very substantially as a proportion of medical school revenues, constituting only 25% of revenues in 1985-1986. Growth in support from state and local (predominantly state) governments was substantial during 1965-1975, when many new state medical schools were started; this growth has continued at a slower pace during the past ten years.

Exhibit 4
Distribution Of Sources Of Revenue For Medical Schools, Millions Of Current Dollars, 1960–1961 Through 1985–1986



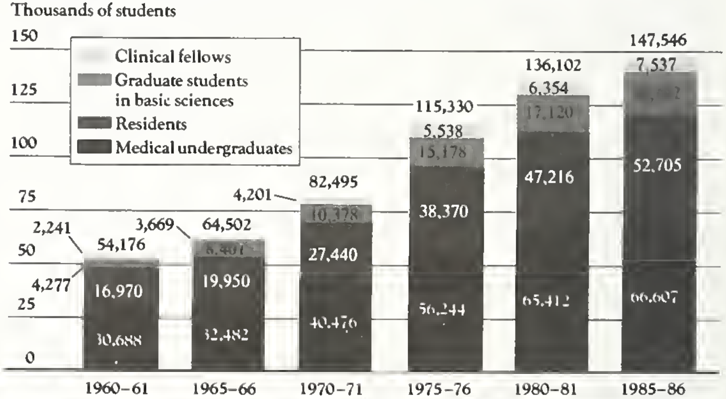
Source: Association of American Medical Colleges.

Earnings from patient care, created directly or indirectly by the clinical faculty, have been increasingly important to medical school financing. Medical school clinical faculty usually belong to faculty practice plans, which collect fees for medical services provided by the faculty and distribute the proceeds to the faculty and to the institution. The amounts for medical service displayed in Exhibits 3 and 4 include practice plan revenues and payments by affiliated hospitals for faculty salaries and other expenses of medical school programs, but they do not include other revenues of affiliated hospitals.

While tuition surely is a substantial burden for medical students, in the aggregate it has never amounted to a major part of medical school financing. Tuition (and fees) amounted to 6.4% of total revenues in 1960-1961 As total revenues grew rapidly, tuition declined relatively to 3.7% of total revenues in 1970-1971, but this source has returned to 5.7% of total revenues in 1985-1986.

Outputs of medical school programs. Medical schools are complex institutions, made up of faculty, students at various levels, facilities, and a network of affiliations. The products of their educational activities include not only graduates with the M.D. degree, but also trained physicians who have completed residencies and advanced clinical training, clinical investigators with the M.D. degree who have completed a program of research training, and individuals with the Ph.D. degree trained primarily for research.

Exhibit 5
Distribution Of Students In Medical Schools, 1960–1961 Through 1985–1986



Source: Liaison Committee on Medical Education, Annual Questionnaire, Part II.

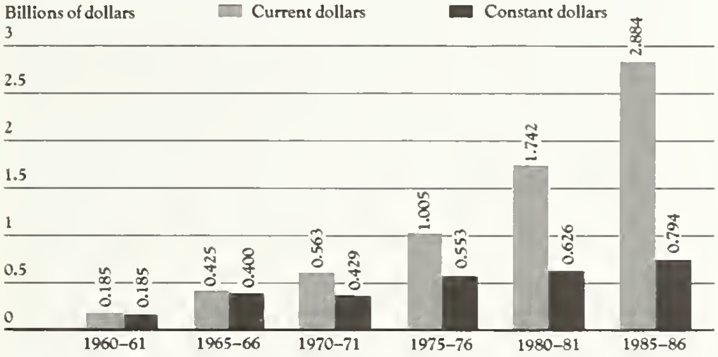
While education is a key mission of a medical school, it is not the only or, in many institutions, even the primary activity of the faculty. For most basic scientists, the dominant activity is research. Some faculty in clinical departments are engaged heavily in research as well, but a larger number are involved in patient care, with or without the presence of residents and medical students.

A major reason for the existence of an academic medical center is the synergistic combination of patient care, research, and teaching, all of which can occur more or less simultaneously. In theory, patient care is enhanced by the presence of research and teaching, while these same patients are essential to both teaching and clinical research. Graduate studies in the medical sciences and advanced research training must of course take place in a research environment. Parenthetically, this very synergy makes it impossible, even in theory, to determine unambiguously the cost of any single product such as an M.D. graduate.

Exhibit 5 displays the numbers of students of various kinds that are the responsibility of U.S. medical school faculty. It is clear from this exhibit that candidates for the M.D. degree, called medical undergraduates in the exhibit, are less than half of all students at present. There are almost as many residents and clinical fellows as medical students, and the number of graduate students in the basic sciences is quite substantial. The latter are a very important determinant of the numbers of basic science faculty required, since the intensity of faculty contact is much greater in graduate school than it typically is in the preclinical years of medical school. Not included are students in other schools of the health professions, for which medical school faculty frequently have some responsibility, nor are college undergraduates who may enroll for advanced science or introductory medical courses. The output of students of all kinds as shown in the exhibit has grown at a compound rate of 4.1% over the twenty-five-year period.

There is no convenient measure of the creation of new knowledge, the essential product of research; a proxy measure such as revenues supporting research must suffice. The unproven assumption accompanying the use of such a proxy is that the amount of new knowledge is proportional, at least in the long run, to the number of inflation-adjusted dollars spent in acquiring it. In any case, it seems fair to assume that a substantial increase in research funding is translated into more person hours in the laboratory, with a resulting increase in the research product. Exhibit 6 displays the growth of medical school revenues for research in both current and constant dollars. In these terms, the output of research may be estimated to have grown at a compound annual rate of 6.4%—substantially more rapidly than the output of students.

Exhibit 6
Revenues For Research In U.S. Medical Schools

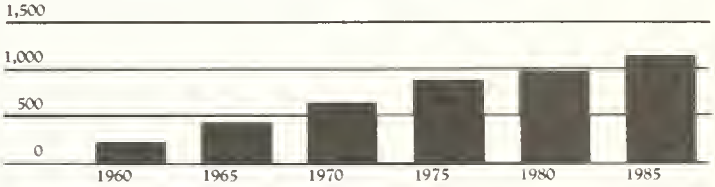


Source: Association of American Medical Colleges.

It would be highly desirable at this point to have a measure of the output of medical service provided by medical school faculty, but this is problematic. Revenues for medical service reported by medical schools have increased by an astronomical compound annual rate of 21.7%, but there is reason to doubt the reality of this figure as a measure of change in medical school outputs. Before the organization of medical practice plans for faculty became widespread, much patient service activity went unreported; some of it undoubtedly still does.

As one measure of the increasing involvement of medical schools in patient care, Exhibit 7 displays the number of hospitals affiliated with medical schools since 1960. The increase from 229 to 1,120 amounts to a compound growth rate of 6.5% annually.

Exhibit 7
Number Of Hospitals Affiliated With Medical Schools, 1960–1985



Source: American Hospital Association.

Exhibit 8 summarizes the growth in U.S. allopathic medical education in the period 1960-1985. It should be clear that the very high rates of growth in faculty and revenues are not based solely or even primarily on the need for contact with students, but are to a much greater extent related to the growth in research and patient care activities of the faculty. This is an important point to remember when considering the potential effects of a reduction in the numbers of medical students and residents. Neither faculty nor revenues will necessarily decrease.

Exhibit 8
Size And Compound Rates Of Growth Of U.S. Medical Schools, 1960 And 1985

	1960	1985	Annual rate of growth
Number of schools	81	127	1.8%
Faculty	11,224	61,397	7.0
Basic science	4,023	14,204	5.2
Clinical science	7,201	47,193	7.8
Students	54,176	147,546	4.1
Affiliated hospitals	229	1,120	6.6
Total revenues			
Current dollars	\$0.436[a]	\$11.096[a]	
Constant 1960 dollars	0.436	3.055	8.1
Revenues for research			
Current dollars	\$0.185	\$2.884	
Constant 1960 dollars	0.185	0.794	6.0
Medical service revenues			
Current dollars	\$0.028	\$3.773	
Constant 1960 dollars	0.028	1.039	15.6

[a] Billions of dollars.

Current Concerns in U.S. Medical Education

Decline in applicants. In parallel with the increase in capacity of the medical education system, which began around 1970, applicants to medical school increased rapidly, reaching 42,674 in 1974-1975 (Exhibit 9). The increase in interest in medical education outpaced the growth in capacity, so that competition for places increased dramatically. There were 1.7 applicants per accepted student in 1960-1961, but 2.8 applicants per accepted student in 1974-1975.

After 1974-1975, the capacity of the system continued to increase, from 14,579 entering places to 16,660 in 1981-1982, but the number of applicants began to drop.

The first large drop occurred in 1978, when the new Medical College Admissions Test (MCAT) was first required. This may have resulted from a decision by some unsuccessful applicants from the previous year, who normally would have reapplied for 1978, not to do so because of the requirement for a new examination. A more rapid decline began with the entering class of 1986-1987, five years after system capacity reached its maximum, and that decline has continued.

Schools have reduced their class sizes only modestly, with an overall reduction of 733 entering places. As a result, competition for admission to medical school has declined substantially to 1.7 applicants per accepted student, just what it was twenty-five years ago.

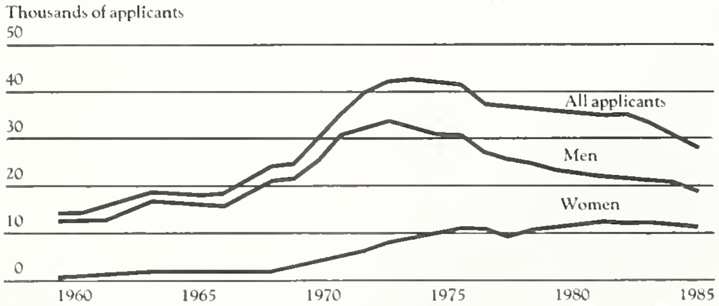
In the most recent year, 1,100 students were accepted to medical school who did not matriculate in that year; this was double the level of nonmatriculation for 1981-1982. While some of these students undoubtedly will matriculate in a later year, perhaps by advance agreement with the accepting school, the increase in nonmatriculants is worrisome.

The reasons for the decline in applicants are unclear, although there are many theories and some data. Many credit the downturn directly or indirectly to publication of the report of the Graduate Medical Education National Advisory Committee (GMENAC) in 1980, which announced the end of the physician shortage and predicted an oversupply. Students may be less attracted to a profession where sharp competition is anticipated and where less need for them is perceived. A decline in the population of appropriate age began in 1984, and this undoubtedly has contributed to the recent decline in applicants. Increasing tuition and the consequent expectation of heavier indebtedness surely have contributed as well. Finally, many examples are reported of practicing physicians discouraging young people from seeking careers in medicine.

Numerous private and public bodies, including the Health Resources and Services Administration of the Department of Health and Human Services, the AMA, the AAMC, and diverse discipline-based bodies of organized medicine, have appointed committees or established programs to reconsider physician requirements. Medical educators are uncertain whether they should strive to increase the number of applicants, or whether they should instead reduce their capacity to accommodate the numbers of individuals presenting themselves for admission.

Participation of women. In 1960 only 1,044 women applied to U.S. medical schools, and 600 of these were accepted. Women were 7.3% of applicants and 7.0% of accepted students. As Exhibit 9 shows, however, the number of women applicants rose steadily until 1984-1985, when it too began to decline. The decline began much later than it did for men; had it not been for women's increased interest in medical education, the decline for all applicants would have been much steeper than it has actually been. The percentage of women applicants and the percentage of women matriculants have steadily increased, reaching 37.0% and 36.4%, respectively, in 1986-1987.

Exhibit 9
Applicants To Medical School, 1960–1985

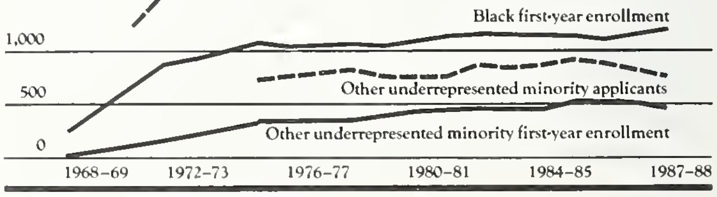


Source: Association of American Medical Colleges.

Based on analysis of academic qualifications and acceptance percentages, it seems clear that women are welcomed as applicants to medical school. Whether population parity will ever be achieved is an open question, but a great deal of progress has been made toward that goal. Those concerned with issues of women in medicine are shifting their focus toward residency and fellowship opportunities, child-care facilities and maternity leave policies, and advancement in academic medicine.

Participation of minorities. A long-term goal of American medical education has been for minorities' representation in medicine to equal that in the U.S. population. Based on a population parity model, blacks, Native Americans, Mexican Americans, and Puerto Ricans residing in a state are considered underrepresented. In 1970, the AAMC approved a report of its Committee on Expanding Educational Opportunities in Medicine for Blacks and Other Minority Students, which established an interim goal that 12% of entering classes should be composed of underrepresented minorities by 1975. At the time this report was prepared, enrollment of underrepresented minorities had been increasing rapidly, from 3.0% of first-year enrollment in 1968-1969 to 7.1% in 1970-1971. The schools increased their efforts to recruit minority applicants, and their numbers in first-year students (Exhibit 10). Unfortunately, the numbers declined from there, and it was not until 1979-1980 that a new high in first-year minority enrollment was achieved. The numbers have gradually increased since then, but overall enrollment increased as well, and only in the 1980s has the percentage of first-year positions occupied by underrepresented minorities begun to increase. Since 1982-1983, this figure has increased, reaching 10.2% in 1987-1988. The figure of 12%, originally established as an

Exhibit 10
Minority Applicants And Enrollment In First-Year Medical School Classes, 1968–1969 Through 1987–1988



Source: Association of American Medical Colleges.

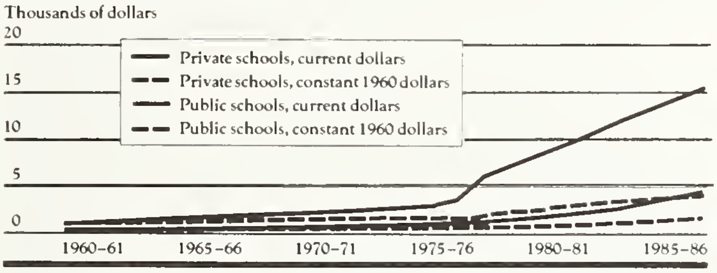
interim goal for 1975, still has not been achieved.

The number of underrepresented minority applicants has fallen in recent years, as the number of all applicants has fallen. Because the decline for underrepresented minorities has been slower than that for the majority applicants, the minority percentage of all applicants has actually increased, standing now at 10.6% of all applicants. Efforts to increase minority participation on medical school faculties have not been very successful. Despite affirmative-action recruiting by the schools, underrepresented minorities make up less than 3% of the faculty.[3] The AAMC and its member institutions formally endorsed a statement in June 1987 rededicating their efforts to undertake, maintain, and reinforce activities to increase the numbers and proportions of underrepresented minority students.

Tuition and indebtedness. In 1960, median tuition at public medical schools was $500, and at private schools it was barely over $1,000 (Exhibit 11). Since 1960, and especially since the termination of federal capitation support at the end of the 1970s, tuition has increased in both current and inflation-adjusted dollars. In current dollars, median tuition in 1987 is $15,023 at private institutions and $4,574 at public institutions, while scholarships amount to less than $2,000 per student, averaged over all students. Only a minority of students receive any scholarship aid at all, and almost half of these scholarships carry service commitments.[4]

Exhibit 11

Median Tuition And Fees For First-Year Medical Students, 1960–1961 Through 1985–1986



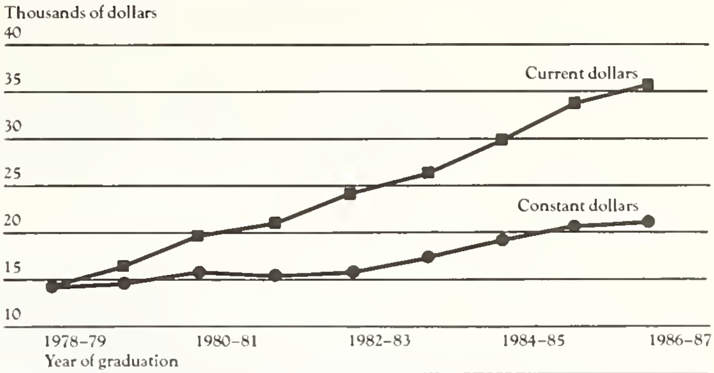
Source: Association of American Medical Colleges.

Indebtedness levels have been rising substantially in both current and real dollars (Exhibit 12). Many medical educators are concerned that these high tuition levels are discouraging qualified applicants from applying to medical school. The figures are especially worrisome to admissions committees trying to increase minority admissions.

U.S. foreign medical graduates. In the 1970s, when the ratio of applicants to places in U.S. medical schools rose to 2.8, many Americans began to be attracted to the alternative of study in foreign medical schools. Some schools in Mexico, in particular the Autonomous University of Guadalajara, accepted large numbers of U.S. citizens, and a number of schools were opened in the Caribbean expressly to cater to the market for medical education of U.S. citizens. This development was of concern to American medical educators, because these institutions, and particularly those established specifically for Americans, were avoiding the quality control offered by the U.S. system of accreditation, and because facilities were in many cases completely inadequate, especially in the clinical area, to meet U.S. standards of medical education.

Exhibit 12

Mean Debt Of Indebted Medical School Graduates, Current And Constant (1978) Dollars, 1978–1979 Through 1986–1987

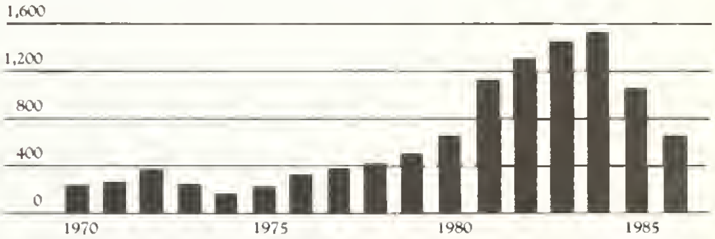


Source: Association of American Medical Colleges, Graduate Questionnaire.

While it was popular to claim that the individuals attending these institutions were well-qualified but frustrated Americans, deprived of educational opportunity by an overly restrictive domestic educational establishment, Johnson and colleagues found that only 44.9% of such students had in fact ever applied to a U.S. medical school.[5] It may be that some of these individuals correctly assumed that their academic credentials were inadequate, since the same study found mean MCAT scores and grade point averages for this group to be not only lower than those means for students accepted to U.S. medical schools, but lower than the means for students rejected at U.S. schools. One-third of these students had a native language other than English. In most cases this other language was Spanish, and this may have influenced them to seek education in a Spanish-speaking country.

Exhibit 13

U.S. Citizens Receiving Certification From The Educational Commission For Foreign Medical Graduates (ECFMG), 1970–1986



Source: Educational Commission for Foreign Medical Graduates.

A student graduating from a foreign medical school who wants residency training in the United States must pass an examination and be certified by the Educational Commission for Foreign Medical Graduates (ECFMG). Exhibit 13 displays the trend in U.S. citizens receiving certification from the ECFMG from 1970 to 1986, showing a strongly rising trend until 1984, when a more rigorous certification examination was introduced. This problem of an excessive flow of U.S. citizens to proprietary foreign medical schools may be solving itself, however, as the numbers have been dropping preciptiously since that year.

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2. In addition to the references cited here, data contained in AAMC files were used for the preparation of this DataWatch. The tables on which this work was based may be obtained by writing the author at the AAMC, One Dupont Circle, N.W., Suite 200, Washington, DC 20036.
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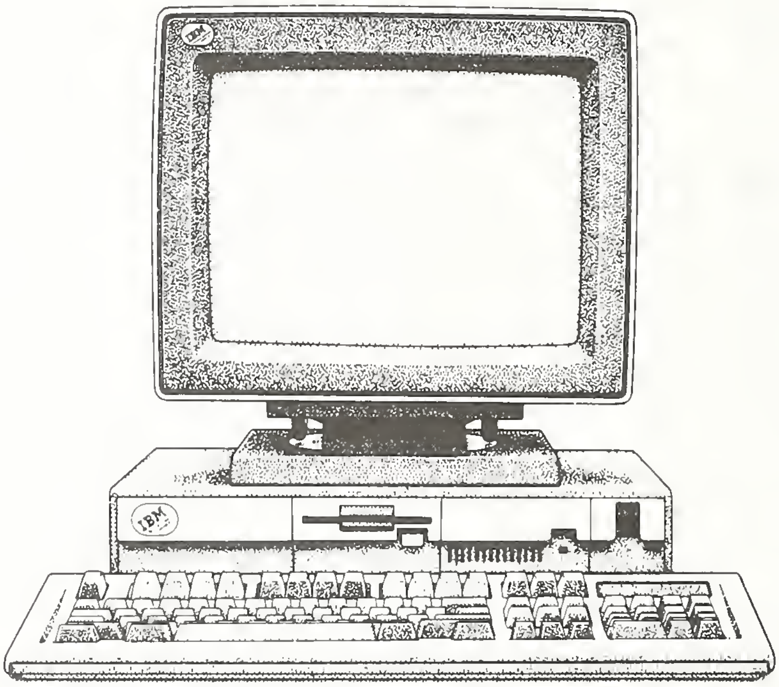

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Ethical Issues Involved in the Growing AIDS Crisis

COUNCIL ON ETHICAL AND JUDICIAL AFFAIRS

THE Council on Ethical and Judicial Affairs of the American Medical Association (AMA) recognizes the growing crisis created by the acquired immunodeficiency syndrome (AIDS) as a crucial health problem involving the physican's ethical responsibility to his patients and to society. The House of Delegates adopted Report YY (1987 Annual Meeting) of the Board of Trustees, which provides excellent guidance for a responsible public policy. As stated therein, AIDS patients are entitled to competent medical service with compassion and respect for human dignity and to the safeguard of their confidences within the constraints of the law. Those persons who are afflicted with the disease or who are seropositive have the right to be free from discrimination.

A physician may not ethically refuse to treat a patient whose condition is within the physician's current realm of competence solely because the patient is seropositive. The tradition of the AMA, since its organization in 1847, is that "when an epidemic prevails, a physician must continue his labors without regard to the risk to his own health." (See Principles of Medical Ethics, 1847, 1903, 1912, 1947, 1955.) That tradition must be maintained. A person who is afflicted with AIDS needs compentent, compassionate treatment. Neither those who have the disease nor those who have been infected with the virus should be subjected to discrimination based on fear or prejudice, least of all by members of the health care community. Physicians should respond to the best of their abilities in cases of emergency where first-aid treatment is essential, and physicians should not abandon patients whose care they have undertaken. (See Section 8.10 of *Current Opinions of the Council on Ethical and Judicial Affairs of the American Medical Association, 1986.)*

Principle VI of the 1980 Principles of Medical Ethics states: "A physician shall in the provision of appropriate patient care, except in emergencies, be free to choose whom to serve, with whom to associate and the environment in which to provide medical services." The Council has always interpreted this principle as not supporting illegal or invidious discrimination. (See Section 9.11 of *Current Opinions,* 1986.) Thus, it is the view of the Council that Principle VI does not permit categorical discrimination against a patient based solely on his or her seropositivity. A physician who is not able to provide the services required by persons with AIDS should make an appropriate referral to those physicians or facilities that are equipped to provide such services.

At its 1987 Annual Meeting, the House of Delegates adopted Substitute Resolution 18, which asked the Council on Ethical and Judicial Affairs to address "the patient confidentiality and ethical issues raised by known HIV antibody positive patients who refuse to inform their sexual partners or modify their behavior." Physicians have a responsibility to prevent the spread of contagious diseases, as well as an ethical obligation to recognize the rights to privacy and to confidentiality of the AIDS victim. These rights are absolute until they infringe in a material way on the safety of another person or persons. Those who are not infected with the virus are entitled to protection from transmission of the disease. Thus, the societal need for accurate information and public health surveillance must also be respected. As the Board of Trustees stated in Report YY, "A sound epidemiologic understanding of the potential impact of AIDS on society requires the reporting [on an anonymous or confidential basis to public health authorities] of those who are confirmed as testing positive for the antibody to the AIDS virus."

In those jurisdictions in which the reporting of individuals infected with the AIDS virus to public health authorities is not mandated, a physician who knows that a seropositive patient is endangering a third party faces a dilemma. The physician should attempt to persuade the infected individual to refrain from activities that might result in further transmission of the disease. When rational persuasion fails, authorities should be notified so that they can take appropriate measures to protect third parties. Ordinarily, this action will fulfill the physician's duty to warn third parties; in unusual circumstances, when all else fails, a physician may have a common-law duty to warn endangered third parties. However, notification of any third party, including public health authorities, without the consent of the patient may be precluded by statutes in certain states. Therefore, the Council reiterates and strongly endorses Recommendations 16 and 17 of Board Report YY. They are that:

Recommendation 16:— Specific statutes must be drafted which, while protecting to the greatest extent possible the confidentiality of patient information, (a) provide a method for warning

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From the Council on Ethical and Judicial Affairs, American Medical Association, Chicago.

The American Medical Association House of Delegates filed this report at its 1987 Interim Meeting.

Reprint requests to the Office of General Counsel, American Medical Association, 535 N Dearborn St, Chicago, IL 60610.

unsuspecting sexual partners, (b) protect physicians from liability for failure to warn the unsuspecting third party but, (c) establish clear standards for when a physician should inform the public health authorities, and (d) provide clear guidelines for public health authorities who need to trace the unsuspecting sexual partners of the infected persoon.

Recommendation 17.—Given the risk of infection being transmitted sexually, and given the dire potential consequences of transmission, serious consideration should be given to sanctions, at least in circumstances where an unsuspecting sexual partner subsequently finds out about a partner's infection and brings a complaint to the attention of authorities. Pre-emptive sanctions are not being endorsed by this recommendation.

The civil rights and liberties of those who are infected with the AIDS virus, as well as those who are not, are entitled to protection. The ethical challenge to the medical profession is to maintain a judicious balance in this regard, including the issue of whether physicians who are infected with the human immunodeficiency virus must inform their patients or whether they may continue in patient care at all. The Council's new opinion on "Physicians and Infectious Diseases" is as follows: "A physician who knows that he or she has an infectious disease should not engage in any activity that creates a risk of transmission of the disease to others." In the context of the AIDS crisis, the application of the Council's opinion depends on the activity in which the physician wishes to engage.

The Council on Ethical and Judicial Affairs reiterates and reaffirms the AMA's strong belief that AIDS victims and those who are seropositive should not be treated unfairly or suffer from discrimination. However, in the special context of the provision of medical care, the Council believes that if a risk of transmission of an infectious disease from a physician to a patient exists, disclosure of that risk to patients is not enough; patients are entitled to expect that their physicians will not increase their exposure to the risk of contracting an infectious disease, even minimally. If no risk exists, disclosure of the physician's medical condition to his or her patients will serve no rational purpose; if a risk does exist, the physician should not engage in the activity. The Council recommends that the afflicted physician disclose his or her condition to colleagues who can assist in the individual assessment of whether the physician's medical condition or the proposed activity poses any risk to patients. There may be an occasion when a patient who is fully informed of the physician's condition and the risks that condition presents may choose to continue his or her care with the seropositive physician. Great care must be exercised to ensure that true informed consent is obtained.

In summary, the Council on Ethical and Judicial Affairs believes that:

- A physician may not ethically refuse to treat a patient whose condition is within the physician's current realm of competence solely because the patient is seropositive. Persons who are seropositive should not be subjected to discrimination based on fear or prejudice.
- Physicians are dedicated to providing competent medical service with compassion and respect for human dignity.
- Physicians who are unable to provide the services required by AIDS patients should make referrals to those physicians or facilities equipped to provide such services.
- Physicians are ethically obligated to respect the rights of privacy and of confidentiality of AIDS patients and seropositive individuals.
- Where there is no statute that mandates or prohibits the reporting of seropositive individuals to public health authorities and a physician knows that a seropositive individual is endangering a third party, the physician should (1) attempt to persuade the infected patient to cease endangering the third party; (2) if persuasion fails, notify authorities; and (3) if the authorities take no action, notify the endangered third party.
- A physician who knows that he or she is seropositive should consult colleagues as to which activities the physician can pursue without creating a risk to patients.

Members of the Council on Ethical and Judicial Affairs include the following: John H. Burkhart, MD, Chairman; Russel H. Patterson, Jr, MD, Vice Chairman; Nancy W. Dickey, MD; Leo M. Henikoff, Jr, MD; Douglas D. Lind, MD, Resident; Richard J. McMurray, MD; Michael A. Puzak, MD; Michael T. Valley, Student; and Mary M. Devlin, JD, Secretary.

Use of Mammography for Breast Cancer Screening — Rhode Island, 1987

CENTERS FOR DISEASE CONTROL

RHODE Island's age-adjusted mortality rates for breast cancer have been consistently higher than national rates since at least 1950.[1] During this period, while age-adjusted mortality rates have remained relatively stable, demographic changes due to an aging population have led to increasing numbers of deaths from breast cancer. In 1986, the number of Rhode Island women who died from this cause was 232—more than the number who died from any other type of cancer.

The Rhode Island Department of Health's Breast Cancer Screening Program is designed to reduce breast cancer mortality by promoting annual breast cancer screening, including mammography, for women >40 years of age. Components of the program include a broad promotional effort, a strong quality assurance program, lowered costs for mammography, and a scheduling and notification system located in the Department of Health. Women with positive, suspicious, or inconclusive findings are followed up by personal contact from health department staff, and their mammograms are also reviewed by a panel of radiologists. If widely instituted, this intervention has the potential for substantially reducing breast cancer mortality.[2,3]

A survey of Rhode Island women age >40 was conducted to establish a baseline for evaluating the program. Women were interviewed concerning their knowledge, attitudes, and practices related to breast cancer screening, including mammography. For this survey, random-digit dialing was used to select a sample of Rhode Island households with telephones. Households that could be contacted were screened for the presence of women aged >40. If more than one possible respondent was identified in a household, one respondent was selected by using a procedure that randomized the selection. Because only 6% of households contacted had more than one eligible respondent, no adjustment has been made in the analysis for the lower probability of selecting women living in households with other eligible respondents. There were 852 completed interviews, for a response rate of 78%. Thirty-seven percent of women aged >40 reported having had a mammogram within the past year, and 70% reported having had a physical breast examination. The likelihood of having had a mammogram or a physical breast examination in the past year was found to vary with the woman's age, education, and income. The age group with the lowest proportion (29%) of women who had had a mammogram in the past year was the age group >70. However, 69% of this age group had had a physical breast examination, a proportion similar to that of other age groups. Among all women aged >40, both the proportion of women having had a mammogram and the proportion of women having had a physical breast examination increased with education and income. Nearly half of the women in the highest income group and 44% of college graduates had had a mammogram in the previous year, and 78% of both groups had had a physical breast examination. The lowest utilization rates for both procedures occurred among the poor. Since 92% of all women had seen a physician in the previous year, the observed variations in screening practices with age, education, and income do not appear to stem from differing frequencies of contact with the medical-care system.

The proportion of women who had had both a physical breast examination and a mammogram in the past year was 35%, just below the proportion who had had a mammogram. When respondents were grouped by age, education, and income, the proportion having had both screening procedures follows closely the total proportion having had a mammogram. Of the women who reportedly had a mammogram in the past year, 96% also had had a physical breast examination. Of those who had not had a mammogram, 54% had had a physical breast examination in the past year.

Women who had not had a mammogram in the past three years were asked—in an open-ended question—for the reason. Many (32%) responded that they did not believe it was necessary, usually because they currently had no symptoms, or that mammography had not been recommended to them (23%), and they had not thought to request it. Others reported fear or dislike of physicians or the procedure itself (11%), procrastination (8%), lack of time (4%), or their physician's recommendation *not* to

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Morbidity and Mortality Weekly Report (Vol 37/No. 23, 1988).

have a mammogram (3%). Very few respondents said that their main reason for not having a mammogram was the cost of the procedure.

Forty-four percent of the women surveyed said that their physicians had ever recommended that they have a mammogram for screening purposes, i.e., as a routine examination when no symptoms are present. Of those women aged >40 who had received such a recommendation from their physician, 60% had had a screening mammogram in the past year. Of those not receiving such a recommendation, 8% had had a screening mammogram in the past year.

Reported by: JS Buechner, PhD, JP Fulton, PhD, RB Kaufmann, DF DiOrio, RN, MEd, HD Scott, MD, MPH, BA DeBuono, MD, MPH, State Epidemiologist, Rhode Island Dept of Health. D Kovenock, MS, Northeast Research, Orono, Maine. Div of Chronic Disease Control, Center for Environmental Health and Injury Control, CDC.

Editorial Note: The use of mammography for breast cancer screening has been shown to reduce breast cancer mortality among women, whether performed with or without a breast examination by a physician.[2,3] On the basis of these findings, the National Cancer Institute has recommended the increased use of mammography as a key cancer screening objective for the year 2000.[5] Both the National Cancer Institute and the American Cancer Society recommend annual physical breast examinations for women aged >40. Both organizations also recommend that women aged 40-49 have a mammogram every one or two years and that women aged >50 have a mammogram every year.[6,7]

Despite the demonstrated efficacy of mammography in screening for breast cancer, most previous studies have shown that few women in the recommended age group are screened regularly.[8] The preponderance of evidence from national surveys indicates that 20% or fewer women in the target groups for breast cancer screening have ever had a mammogram. Although most of these data were collected nearly 10 years ago, more recent evidence suggests that national screening rates are lower than those observed for Rhode Island. The Health Promotion and Disease Prevention Supplement to the 1985 National Health Interview Survey of the Nation Center for Health Statistics showed that only 45% of women aged 45-64 and 39% of women aged >65 had had a physical breast examination in the previous year.[9] Data from the first quarter of 1987 obtained from the Cancer Control Supplement to the 1987 National Health Interview Survey indicate that, nationwide, an estimated 16% of women aged >40 had had a mammogram in the past year that was not performed because of a health problem.[10] Compared with national data, the survey of Rhode Island women showed unexpectedly high levels of recent breast cancer screening even among women with lower levels of education and income. approximately 70% of women aged >40 reported having had a physical breast examination, and 31% reported having had a mammogram for screening purposes, i.e., not because of a health problem, in the past year. Explanations for these differences are unclear, but they may be partly due to the higher degree of urbanization and access to health care in Rhode Island than in the United States as a whole.

Clearly, a major focus of any breast cancer screening program should be to increase the proportion of primary-care physicians who recommend screening mammograms. A nationwide survey of physicians sponsored by the American Cancer Society in 1984 revealed the attitudes that must be overcome.[11] When mammography is performed, it is nearly always part of a complete screening regimen for breast cancer, according to these data. In Rhode Island, a recommendation by a physician appears to have increased a woman's compliance with guidelines for mammographic screening more than sevenfold. Given the apparent motivating force of a physician's recommendation, as shown by the Rhode Island data, the number of physicians who endorse and recommend mammography must increase if promotional programs for breast cancer screening are to be successful.

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Henoch-Schönlein Purpura—Connecticut

BETWEEN August 13 and December 15, 1987, a cluster of 20 cases of Henoch-Schonlein Purpura (HSP) involving children under 10 years of age was identified in Connecticut. In contrast, eight cases had been identified in the state during the first seven months of the year. HSP is a vasculitis that involves the skin and other organ systems and primarily affects children.

The cluster was initially noted by a Hartford pediatric nephrologist who was consulted regarding eight children, four of whom became ill over a two-week period. The Connecticut Department of Health Services then identified other cases by calling approximately 100 practicing pediatricians and members of all nine hospital pediatric departments in Hartford County. In addition, selected pediatric group practices and all teaching hospitals with pediatric or family practice training programs throughout the state were contacted.

Ten cases were identified in Hartford County, where case finding was the most intensive. Six of the ten patients lived in the city of Hartford and had onset of symptoms between October 15 and November 25 (attack rate for the city of Hartford, 2.9/10,000 children under 10 years of age). The other four lived in surrounding towns (0.5/10,000 children). Hispanic children accounted for five cases in Hartford County and had an attack rate more than five times that of either black or white children (Hispanic children, 4.0/10,000; black children, 0.8/10,000; white children, 0.5/10,000). The ten cases outside of Hartford County involved eight white and two Asian children. No confirmed cases were found in Bridgeport, a city with a demographic composition similar to Hartford's.

All 20 children had a rash characteristic of HSP. Sixteen children developed arthritis, 16 had abdominal pain, and at least five had microscopic hematuria. Ten children were hospitalized. None died or developed serious complications.

To increase case finding, a letter requesting reports of all cases seen since January 1, 1987, has been sent to all pediatricians and all family practitioners in the state. A statewide case-control study to identify risk factors for acquiring the illness is under way.

Reported by: M Rasoulpour, MD, Hartford Hospital, Hartford; M Cartter, MD, N Tolentino, MSPH, P Mshar, JL Hadler, MD, MPH, State Epidemiologist, Connecticut Dept of Health Svcs. Epidemiology Office, Div of Viral Diseases, Center for Infectious Diseases; Div of Field Svcs, Epidemiology Program Office, CDC.

CDC Editorial Note: HSP is identified by a characteristic rash most prominent on the buttocks and legs and is often associated with arthritis of the knee or ankle, abdominal cramping, or hematuria.[1] As in this outbreak, the prognosis for the disease is generally good. However, a small percentage of children develop chronic glomerulonephritis.[1,2] The number of children in the United States with renal failure resulting from HSP is unknown; however, it has been estimated that HSP is the cause of renal failure for 15% of the children on dialysis in Europe.[3]

Because HSP is not generally a reportable disease, the incidence of the disease in the United States is unknown. Series of cases in the literature indicate seasonal changes in the incidence; the largest number of cases usually occur in the winter.[2,4] An extensive search of the literature did not reveal any previous reports of clusters of HSP or of a predilection for Hispanic or urban children. The etiology of HSP is unknown; however, it is believed to be caused by an immunologic response to a variety of different stimuli.[5] In individual cases, it has been linked to foods,[6] medicines,[7] toxins,[8] insect bites,[9] and various infectious agents.[10-13] Approximately two-thirds of the children in three large series of HSP reported symptoms of an upper respiratory infection during the month before onset.[1,2,4] However, no agent was implicated as a cause of the symptoms.

State health departments are requested to notify the Epidemiology Office, Division of Viral Diseases, Center for Infectious Diseases, CDC, of any clusters of HSP. Investigation of clusters may identify agents responsible for causing HSP and may ultimately help in formulating strategies for prevention.

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News of M.D. Health Plan

CSMS-IPA

A New Enterprise

EFFECTIVE July 1, 1988, M.D. Enterprises of Connecticut, Inc. (MDEC) will embark on a new project involving the statewide network of the CSMS-IPA, Inc. participating physicians.

As you are aware, MDEC, the parent holding company of M.D. Health Plan, your HMO, was formed to enable physician-owners to engage in profit making enterprises beyond the HMO itself. In this spirit, MDEC has entered into agreement with Stirling and Stirling Inc., of New Canaan, to provide management services and a delivery network to Stirling and Stirling employer clients. Stirling and Stirling is a Third Party Administrator (TPA), hired by employers to administer and coordinate their self-insured programs. Stirling and Stirling does not undertake utilization review or quality assurance reviews but felt the need to do so for their clients. MDEC, with its utilization review and quality assurance program in place, and with its available computer/MIS capacity, was a natural partner to work with Stirling and Stirling on this enterprise. CSMS-IPA Inc., with its statewide physician network representing all specialties, was a natural partner to furnish a delivery network for Stirling and Stirling.

MDHP participating physicians' interaction with Stirling and Stirling patients will be no different from that with MDHP members. There will be a slightly different but similar ID card which will still have the MDEC logo on it. The patient ID number will have the addition of an "S" to identify these patients. The same encounter forms and referral forms will be used. Preadmission certification will be required for admission and will be handled through the same 800 number as are your MDHP admissions. Finally the same fees under the same fee methodology will apply including a withhold, though it will be sent to you on a separate check and invoice. Questions, complaints, concerns, etc. should be directed through the IPA just as now.

It should be recognized that these patients coming from this venture represent patients who would otherwise not be available to join MD Health Plan since their employers have decided to self-insure. This venture therefore gives CSMS-IPA access to up to 40,000 new patients for its participating physicians. Stirling and Stirling will, of course, be paying MDEC for its administrative costs which therefore gives MDEC access to a new source of funds. Combining this with the large and skilled sales force of Stirling and Stirling, both parties gain in the venture.

We are pleased with this Stirling and Stirling undertaking and look forward to MDEC's involvement in other enterprises as well. These types of projects will enable our physician owners/investors of MDEC to realize a profit while at the same time remaining true to our goal of providing quality care, controlled by the medical community, yet remaining cost effective and competitive.

New Stock Offering Soon

Since the close of the stock offering for MD Enterprises of Connecticut, Inc. in February, many physicians have called to ask to become participants in the program. This trend has accelerated in the recent month or so undoubtedly because events in the HMO and health insurance industry in Connecticut have demonstrated to the physicians of the state the critical importance of their owning and controlling their own HMO organization.

M.D. Health Plan, the statewide HMO sponsored by the Connecticut State Medical Society, will introduce a second stock offering to physicians, according to Douglas Hayward, President. The offering is unique in that physicians will be able to purchase the stock with little or no money down as the result of a creative investment structure.

"We have established some new ground rules for physicians to join the M.D. Health Plan network. The program allows physicians to reduce and sometimes eliminate up-front out-of-pocket investment and yet provides full membership participation," said Hayward. Hayward stated that M.D. Health Plan is committed to building the largest physician access in the state. M.D. Health Plan currently has over 1,700 participating physicians and provides member access to all 36 acute care hospitals in Connecticut.

"We believe it is important for participating physicians to own M.D. Health Plan. Ownership means control and all physicians understand the need to direct and control the health care decisions regarding their patients," continued Hayward. Details concerning the time and length of the second stock offering will be disclosed in a new prospectus to be available when the SEC declares the registration statement effective.

Any physician needing other information may call Douglas Hayward at M.D. Health Plan, 389 Whitney Avenue, New Haven, CT 06511, 203-776-5759.

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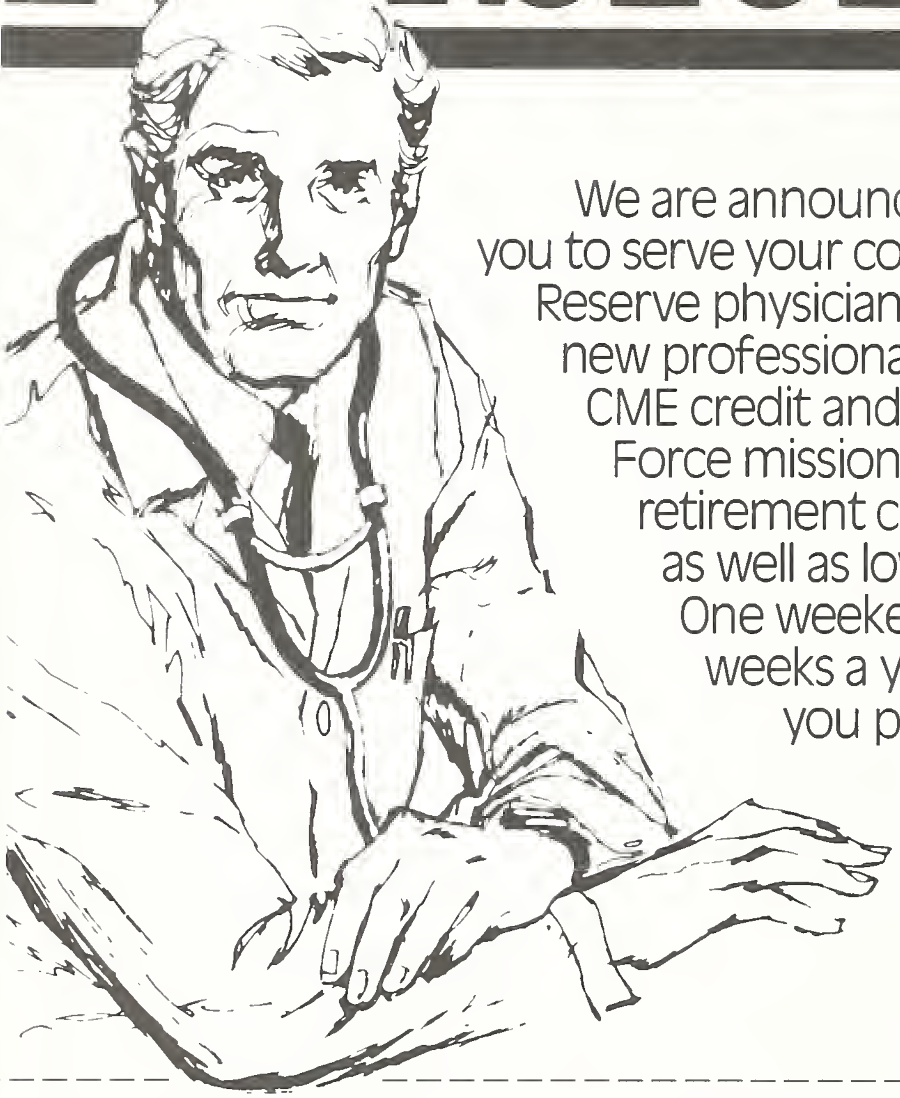

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View from the Hill

JAMES E. BRYAN

A brilliant commentary on the profound quandary presently confronting American medicine appears in the February 4, 1988, issue of *The New England Journal of Medicine.* The authors, William Winkenwerder, M.D., M.B.A., and John R. Ball, M.D., J.D., are both physicians, but Dr. Winkenwerder also holds a master's degree in business administration and is employed by the Health Care Financing Administration, and Dr. Ball is an attorney with the American College of Physicians. In their commentary, the authors keenly perceive both the danger and the absurdity of current political and industrial pressures to reduce medicine to a trade. They demolish such reductionist pretensions in a satire worthy of Jonathan Swift or Francois Rabelais.

The authors' opening hypothesis is that corporately managed systems and government agencies—as buyers and regulators—have displaced physicians and patients as the central actors in medical care, and that large-scale payers (government, private employers, and insurers) and large corporate providers (HMOs, PPOs, etc.) have transformed the physician/patient relationship "based on a covenant" of trust into a "contractual relationship in which the physician provides a specified, measurable service at a negotiated price." Health care, they assert, has become a commodity, "a purely economic service." They acknowledge that this effectively predicates access to care on economic status.

The authors predict that people "once almost universally regarded as patients" will be increasingly perceived as "customers." They note that if this new "medical marketplace" is to operate efficiently, its customers must make informed choices, despite the unhappy circumstance that patients can scarcely be expected to be "good customers" because (1) quality of medical care is not definable, (2) patients, ill or indisposed, may not be capable of making sound decisions, and (3) patients are seldom aware of the scientific and technical aids now available to "providers." Large-scale buyers of health care protection cannot hope to provide more than general information to their customers and thus fall far short of accommodating individual needs or of assuring quality service.

There follows a score of challenges and admonitions to the medical profession. The first is to educate its customers: to inform them about preventive care, cost of care, access to care, and the risks and benefits of various methods and procedures. One wonders when physicians will find time to carry out these "customer service" functions or even to absorb all the data themselves. We are also reminded that physicians are expected to serve as "patient advocates," moderating differences between customers and providers or advising "when patients and families are uncertain of their options."

The trend, we are told, "is toward national, proprietary companies whose activities are characterized by consolidation, vertical integration of services, and market positioning." What young man or woman, contemplating a career in medicine as a worthy investment of his or her life, would wish to become a cog in such a subhuman structure?

The authors admit "there has been debate about how effectively such systems meet people's true health needs," but they assert that "there is little evidence . . . that greater and more comprehensive organization [read 'bureaucratization'] of services decreases the quality of care." Rather, they suggest that "health care has increasingly been provided in large institutional settings, and care has improved."

These writers admit the likelihood of "inherent conflicts between [physician] work value and corporate requirements," but they cite an obscure claim that some physicians "actually find satisfaction in hierarchies of authority and organizational rules." They recommend that the profession accept the responsibility of determining "what effect the corporate organization [and domination] of services has on patients and physicians."

Their new bosses would have physicians learn all about organization structures, outcomes and adaptation to patients' changing medical needs. Physicians are urgently recommended to acquire formal training, wide expertise, and broad experience in organizational techniques and financial management. Add to this a prescribed need for physicians to develop criteria for the use of their procedures and tests; to police their colleagues; to strengthen their state licensing boards and stimulate their disciplinary functions, and to involve themselves in strengthening peer review activities.

Physicians would be further tasked to counsel their colleagues as to what constitutes "appropriate practice" under various conditions and "to use such information in confronting those who do not meet standards." Large purchasers of medical services are reported to be playing

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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a growing role in negotiating prices, specifying services, and promoting quality standards. The writers suggest that although buyers emphasize price over quality, insured patients tend to reverse this order of preference.

A further admission is that buyers often opt for service patterns on the basis of their "expectations of the return on investment" and "seek investor sources of financing and for-profit structures as opposed to not-for-profit systems." So, the tasks and mission of the medical profession, by decree of the new masters of medicine, are to maintain high-quality services, control costs, assure access, support excellence in teaching and research, and maintain good patient/physician relations while regarding the investor sources of financing with a higher assurance of profitability.

The new masters of medicine are allegedly warning that expenditures for health services will have to be controlled by "economic constraints" (i.e., reduced fees) to make services affordable to the poor. They hint at a need to determine the value of medical interventions (new and costly procedures) in a selective way, involving criteria of a seemingly elitist nature. They also challenge the profession to determine sources of funds "equitably to pay for 'nonprofitable' functions, such as basic research and education, that may no longer be sustained as the health care environment becomes more competitive." They acknowlege that "it is not yet clear how much the shared decision-making [i.e., the loss of dominance in health care by medicine to big payers, provider organizations, consumer groups, special interest groups, etc.] will improve the system overall."

Drs. Winkenwerder and Ball observe that "the ideals of competition, efficiency, risk-taking, profit, and market-derived concepts of quality service are determining priorities." This leads them to raise the critical question: How well can "the values of physician-patient trust and of doing what is best for patients" be maintained in such an environment? To clarify the question, they ask: "How can physicians decide appropriately about patients when they must make choices that balance the benefits of people against those of society and those of the corporate provider (and the physicians themselves)?"

The authors' responses are reassuring: "Securing the health of human beings . . . lies at the core of the medical care system. The highest priority must be the health interest of people, including . . . those who are economically or socially disadvantaged." They assert that "medical care of clearly defined quality is a professional value to which we must cling. Physicians must ensure" that their organizations are designed "to ensure the high quality of care" and that they are organized in such a way that "patients and physicians can trust each other."

To epitomize the quandary and the challenge, Drs. Winkenwerder and Ball conclude: "Health care delivered in a market environment demands a responsible fiduciary body. The medical profession will be in the best position to do all this if it remains committed to a core set of values and responsibilities. Now is the time to reaffirm these commitments publicly."

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Editorial

The Ethics Business

Nineteen eighty-seven may be remembered as the year when executives began to talk about ethics without embarrassment. It will be recalled as the year when certain Wall Street businessmen were arrested and led away in handcuffs while colleagues watched in astonishment. It was the year when a number of public and political figures suffered the infamy of censure and humiliation for their betrayal of trust. It was the year when *Time* magazine featured "moral disarray in America" as a cover story, and nationally ranked business schools promoted their ethics courses with a fervor traditionally reserved for profit maximization.

Despite its popularity, the ethics bandwagon has not enjoyed unhindered passage through our national psyche. Skeptics have voiced their disdain of the "ethics business," many with an indignation equal to that of the accusers. One prominent editor at the *Wall Street Journal,* for example, calls the consternation over business ethics "moral zealotry," and goes on to assert that "we are applying to ourselves, at least to our public and private leaders, standards of ethics never before expected of ordinary mortals." Other commentators lend support to this viewpoint, arguing that the amount of insider trading was at least as widespread 30 years ago as it is now; the difference, they contend, is attributed to today's regulatory agencies, vigilante press, and consumer groups. In other words, the executive in 1987 is held to account with much greater rigor than ever before.

To the student of history, the reemergence of ethics as a serious issue in the conduct of life is not remarkable. The same impulse that moved Aristotle to generate a treatise on ethics now inspires contemporary observers to invoke enduring ethical principles as a bulwark against corporate greed and white-collar crime. Whereas Aristotle urged education as a corrective, today's critics recommend the development of ethics courses and institutes for the study of ethics, and a tightening of ethical standards among our nation's leaders. (Lester Thurow sees the only permanent solution in an "adjustment" of human nature that replaces self-interest with the common good.)

Having emerged more slowly, deliberation on ethics in health management has a less extensive history. Partially this is because ethical inquiry into fundamental issues such as the allocation of scarce resources was unnecessary when funds for patient care were plentiful. In 1975, ten years after Medicare gave urgency to the issue of economics in health care, Daniel Callahan of the Hastings Institute announced that in assaying the field of health management he had found "no literature on morality and health care management." At the time of his comment, the subject was not regarded as an area worthy of sustained analysis and scholarship; thus, an observer might have concluded that concerns such as health care funding, conflict of interest, and the distribution of limited resources were considered of less consequence than concerns relating to the treatment of patients.

Since 1975, the literature on health management ethics has grown markedly. To a significant degree, this change has occurred as a countervailing response to the "corporatization" of health care—a kind of urgent counsel to uphold traditional social contract principles in a competitive, market-driven health care system. Indeed, ethical awareness in health care has become obligatory. Owing to the efforts of a handful of concerned individuals, it has slowly gathered strength as a topic deserving of serious study. That ethics in health care management is finally receiving its due is suggested by its heightened visibility at conferences, as well as by the growing number of citations to it in the *Hospital Literature Index.* Further evidence of this interest is suggested by the single-subject issues on ethics in health management journals. For example, this year's July/August issue of *Healthcare Executive* is devoted entirely to ethics; in the words of the editor, "medical practice is changing so fast that healthcare professionals need guidance in *how* to work through ethical conflicts."

What should be our response as health care managers to the current ethics consciousness? Should we join those enthusiasts who demand a larger ethics component in professional training and continuing education? Should we add new layers of assessment to the process of performance appraisal? Or should we begin with a resolution to explore more fully the meaning and implications of ethics in health care management?

I suggest the last option, as a start. We should begin at a logical staging point for renewed ethical inquiry, perhaps with those protocols and ideals described in the Code of Ethics of the American College of Healthcare Executives. This document outlines standards of behavior in fundamental areas of responsibility to (1) the profession of health care management, (2) the organization and patients, and (3) the community and society. In its most recent (1987) edition, the code outlines an *active* role:

> In fulfilling their commitments and obligations to patients, clients or others they serve, healthcare executives function as moral agents . . . . The role of moral agent requires that healthcare executives speak out and take actions necessary to promote . . . rights, interests, and prerogatives if they are threatened.

Editorials are expressions of personal opinion and do not necessarily reflect the policies of CSMS.

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Moral agency implies not simply the avoidance of harm to others, but the exercise of virtue on behalf of others, not simply deliberation on what one *ought* to do, but initiative, action.

Although the achievement of "moral agent" status is problematic, a useful approach is offered from a respected source. Psychiatrist Robert Coles, in a recent issue of the *Harvard Business Review,* discusses his use of the work of poet/physician William Carlos Williams, in his course on ethics in management. An important feature of Williams's writing, and one that appeals to Coles immensely, is the power of his conviction that—in Williams's words—"smart isn't necessarily good." In other words, brainpower is no assurance of a life well-lived; one may walk off with all the prizes in graduate school and do "brilliantly" in professional life, yet be abysmally lacking in exemplary moral conduct.

To guard against short-sighted expedience and narrowly focused goals in professional and private life, we would do well to develop the habit of frequent moral introspection through exercise of what Williams terms the "moral imagination." Most health managers will recognize the importance of this activity; most acknowledged the central role of ethical deliberation in professional and private life. In a 1982 survey of health care managers' knowledge of their Code of Ethics, for example, most respondents expressed an interest in learning more about the code and how its provisions are interpreted. Now, in 1987, when "moral disarray" is a regular feature in the national media, we would be well-advised to examine the code and measure our own performance against it, not simply as a demonstration of duty, but as an exercise of "moral imagination" and an example for others who are looking for leadership.

Sam Levey
Editor

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AROUND THE STATE

Conferences

Literature and medicine is the subject of a two-day conference to be held at the University of Connecticut Health Center on 9 and 10 September 1988. This will be a working conference for teachers of medicine and literature; faculty, numbering 20, have been drawn from liberal arts and medical faculties across the country; the organizers of the conference are Janice Willms, M.D., Henry Schneiderman, M.D., and Richard M. Ratzan, M.D.

A one-day conference on the medical aspects of travel, sponsored by the Division of Infectious Diseases, Department of Medicine, University of Connecticut School of Medicine, will be held in Farmington on 23 September 1988.

For more information, call Cecile J. Volpi at (203) 679-3340, Farmington.

Occupational Medicine for Practitioners is the subject of a two-day Continuing Medical Education course to be held at Yale University School of Medicine on 23 and 24 September 1988. Co-sponsored by: Occupational Medical Association of Connecticut, American Lung Association of Connecticut and the Connecticut Chapter of the American Academy of Family Physicians.

This two-day course will provide health practitioners with a clinical approach to evaluation and treatment of occupationally related diseases. Course Director is Mark R. Cullen, M.D. and Co-Directors are William S. Beckett, M.D., MPH and Martin G. Cherniack, M.D., MPH.

For more information contact the Office of Postgraduate and Continuing Medical Education, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510; telephone (203) 785-4578.

Dr. Meridy Represents CSMS

At its last meeting on 2 June, The CSMS Council Authorized funding for CSMS-HMSS President Howard Meridy, M.D., to represent the new Hospital Medical Staff Section at the Annual Meeting of the AMA-HMSS in June. To date, 36 out of the 42 acute care and specialized hospitals in the state have named delegates to the CSMS-HMSS. Its next business meeting is scheduled for September 1988.

The President's Page

Medicare Assignment

Medicare assignment will take on a new look this month. Because of the actions of a confused legislature in the last hours of the session and a tie vote with one minute in the session remaining, and which Lt. Governor Fauliso refused to break, we are left with mandatory assignment. The income levels for which mandatory assignment *must* be accepted are $19,950 for singles and $24,000 for couples. This is approximately 68% of the senior population according to the Department of Aging.

We are all losers in the state with this result. We physicians must now live with the word *mandatory* when it applies to no other provider. The seniors now have a mandatory program at the 68% level of income while our voluntary program had already reached 77% of claims. The state now has to administer a program for which there was no appropriation in the bill, and which was being funded by the state and county societies while the voluntary program was in effect.

Our response has been measured. We are angry and frustrated that we have been singled out for mandatory assignment when we showed that a voluntary plan can work—assignment levels rose from 64% in January 1987 to 77% in April 1988. We have contacted the media through a press conference to make clear our position. We have recommended the continuation of the voluntary program to July 1 when we must look to the state for continuance of their mandated program.

The Department of Aging is making an excellent effort to smooth the transition. We have been assured that new cards will be issued to all in the appropriate income levels. We have agreed to honor the courtesy card until 1 January 1989, and the CONNPACE card will also be honored, both by emergency regulation, until new cards can be issued in orderly fashion. Applications will be available for distribution in physicians' offices. The success of the programs should limit further change. I strongly feel, however, an attempt to modify this legislation will again be made and hope cooler heads will prevail. There will be a great amount of pressure from the activist seniors to make assignment mandatory for all Medicare claims. A reasonable bill would not have given one segment of society which can afford its medical care a subsidy others don't have. The federal law gave physicians a choice on balance billing. Dr. William Roper, head of HCFA, is on record as opposed to mandatory assignment. Should this again come up in the legislature, I would hope we have an organized and massive response of physicians to lobby for what we feel is a reasonable and balanced approach to assignment.

At the annual meeting of CSMS, our guest physician from Burlington, Vermont, told us of the physicians' response to a modified mandatory assignment bill in his state. A number of physicians wrote to their younger patients explaining why their fees had to be raised and naming their local legislators, and the mandatory assignment bill they voted for and passed, as the cause. This made front page news in the Burlington newspapers and upset the legislators (rightly so) in an election year.

I would like to hear from as many physicians as possible who would be willing to help with letters to legislators, testifying at public hearings, and if possible being available for capitol legislative activities. If you will contact me at the CSMS office you can be certain your talents will be utilized.

Norman A. Zlotsky, M.D.
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Reflections on Medicine

The Obstetrics of the Soul

ROBERT U. MASSEY, M.D.

"It's Over, Debbie," accomplished what *JAMA*'s editor, George D. Lundberg, hoped it would: it provided an opener for conversations about the care of the dying among nurses, house officers, attendings, lawyers, and ordinary men and women who are anxious about how medicine's technology has changed the ways of death. Letters to the editor as well as less formal but more spontaneous comments have expressed feelings ranging from righteous outrage to sympathetic applause over the possibly spurious tale of the tired gynecology resident who may have put to death a terminally ill 20-year-old woman with ovarian cancer by giving her an injection of 20 mg of morphine.

About this same time Daniel Callahan's book, *Setting Limits,* appeared in book review columns and bookstores, and evoked lively but more philosophical debate. Then a group in California was reported to be pushing for an initiative called "The Humane and Dignified Death Act." It has become easy to work up a discussion of euthanasia, but always distinguishing between active and passive forms, always probing tentatively to detect hints of how the others may feel about what we are apt to say. Several physicians whom I invited to review *Setting Limits* thought they would rather not; others said the book was provocative, then changed the subject. It is easy for doctors to be misunderstood in these matters.

Our standard rules seem clear enough. "I will neither give a deadly drug to anyone if asked for it, nor will I make a suggestion to this effect."[1] It may be argued that this, along with the next line prohibiting abortion, are Pythagorean and therefore not likely to have bound all Greek physicians, nor, by extension, all of us. Relativists will describe situations in which suicide is the only merciful way out, and suggest that the doctor, or friend, may have an obligation to help. It is not difficult to defend the argument, however, that society is safer when the rule is quite literally interpreted. The sixth commandment is unambiguous (except possibly in the Book of Common Prayer translation: "Thou shalt do no murder").

Anyway the debate is not about *euthanasia* in its acquired sense, but rather about the physician's obligation to provide for *euthanasia* in the old sense of an easy and gentle death, as Suetonius used the word 18 centuries ago:

> As often as Caesar Augustus heard that someone had died quickly and without suffering, he prayed for euthanasia, using this very word, for himself and his family.

Several months ago a house officer at St. Elizabeth's Hospital in Boston wrote an essay for *The New York Times* (12 April 1988) called "Mr. Rosen's Long Painful Death." He described a dying patient, brain-dead after his heart attack:

> And with such dispassionate care, Mr. Rosen's death stretched into months. When his blood pressure dropped, he received intravenous fluids. When infections threatened to overwhelm his system, he was quickly treated with powerful antibiotics. The feeding tube pumped a continuous ooze of nutrition. The respirator monitored, supplemented, and when necessary replaced his breathing. Down the hall, his heart rhythm blipped on the nursing station monitor, confirming normal functioning . . . .
>
> Sadly, though, I rarely have heard doctors discuss our dilemma. Rather, the subject, and even the patient, are avoided whenever possible . . . .

In 1826 a medical student at Göttingen, C.F.H. Marx, wrote his doctoral thesis, "De Euthanasia Medica,"[2] urging that doctors who care for the dying observe four points: to alleviate the patient's condition "through foresight and guidance," to remove "everything that might increase the patient's pain and suffering," to cheer "the patient's soul and mind with gracious and convincing comfort," and to give consideration "of objects and persons that such care embraces."

But he was quite clear on euthanasia in the new and dangerous sense: " . . . least of all should he be permitted, prompted either by other people's request or by his own sense of mercy, to end the patient's pitiful condition by purposely and deliberately hastening death." This does not, however, mean that he should not practice what the German medical historian, Rohlfs, in 1880 called "the obstetrics of the soul."

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LAW, MEDICINE AND PUBLIC POLICY

Active Euthanasia: Lessons from the President's Commission

JOSEPH M. HEALEY, J.D.

The appearance of "It's Over, Debbie"[1] and the campaign to place The Humane and Dignified Death Act on the California ballot this fall are reminders that the issues raised by active euthanasia are very much still a matter of public concern. In last month's column,[2] I discussed these two developments and reviewed several of the arguments raised by proponents and opponents of active euthanasia. Among the many areas of contention between proponents and opponents has been disagreement about how best to describe what is involved and what the implications of the descriptions will be. In its report, *Deciding to Forego Life-Sustaining Treatment,*[3] The President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research provided a useful analysis of this problem. The Commission's work has been important in clarifying the ethical and legal boundaries of many contemporary problems in health care and a review of their efforts in this area should be helpful in assessing the current debate.

The Commission directly confronted the problem of selecting the appropriate conceptual framework by proposing a shift in terminology. It rejected the use of the terms "killing" and "letting die" and recommended using instead the terms "actions that lead to death" and "omissions that lead to death." Such a shift would help to reduce the tendency to blend a description of the act with a connotation of approval or disapproval for it, and would make possible the clearer examination of what the doctor actually did or failed to do. The Commission then acknowledged the difficulties in applying the distinction. There is not a clear line between acts and omissions. Furthermore even if it has been established that an act or an omission is involved, such a conclusion does not automatically establish whether the act or omission was morally and legally justified.

In general, most acts that lead to death are not morally or legally acceptable. The Commision points out:

> The moral and legal prohibition against acting to take the life of another human being is deeply rooted in Western society and serves the laudable and extremely important value of protecting and preserving human life. Although health care professionals and families want to do the best they can for patients, both in respecting patients' self-determination and promoting their well-being, they face troubling conflicts when doing so would involve them in conduct that might be considered as the taking of another's life.[3(pp70,71)]

In general, most omissions that lead to death in medical practice are morally and legally acceptable.

> The present general legal prohibition against deliberate, active killing, reinforced by a strong social and professional presumption in favor of sustaining life, serves as a public affirmation of the high value accorded to each human life. The law, and public policy in general, has not interpreted the termination of life-sustaining treatment, even when it requires active steps such as turning off a respirator, as falling under this general prohibition. For competent patients, the principle of self-determination is understood to include a right to refuse life-sustaining treatment, and to place a duty on providers and others to respect that right. Providers, in turn, are protected from liability when they act to aid a patient in carrying out that right.[3(p72)]

There are exceptions to each general principle, but it is not the distinction between act and omission *per se* that accounts for the difference. The moral and legal acceptability turns upon other factors such as the duties which the doctor owes to the patient; the patient's prospects and wishes; the risks imposed upon the one who acts or omits to act. These factors provide assistance in clarifying the extent to which the general principles or exceptions apply.

Discussion of these issues will conclude in next month's column.

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IN MEMORIAM

BURKE, FRANCIS H., Georgetown, 1931. Dr. Burke was a general surgeon in the Tolland County areas since 1931. He was a member of the Tolland County Medical Association and the Connecticut State Medical Society; died 12 April 1988.

CASTALDO, LOUIS F., Tufts, 1937. Dr. Castaldo was an otolaryngologist in the Fairfield County area since 1939. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 2 April 1988 at the age of 76.

DORISON, EZRA E., Berne, Switzerland, 1956. Dr. Dorison was a psychiatrist in the Fairfield County area since 1957. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 3 May 1988 at the age of 58.

GILMAN, RALPH L., Harvard, 1929. Dr. Gilman was a general practitioner in the Windham County area since 1930. He was a member of the Windham County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 7 May 1988 at the age of 86.

GOLDENBERG, JACOB J., Dalhousie, 1926. Dr. Goldenberg was a general practitioner in the Hartford County area since 1928. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 8 June 1988.

GROSS, NORMAN, Creighton University Medical School, 1949. Dr. Gross was a family practitioner in the Hartford County area since 1950. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 26 May 1988.

HABERLIN, CHESTER E., Medical College of Virginia, 1924. Dr. Haberlin was a public health practitioner in the Fairfield County area since 1924. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 22 April 1988 at the age of 88.

HERSHEY, DAVID D., Albany Medical College, 1950. Dr. Hershey was a family practitioner in the Hartford County areas since 1951. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 19 May 1988.

LIROT, STEPHEN L., McGill, 1932. Dr. Lirot was an opthalmologist and an otolaryngologist in the New Haven area since 1933. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 5 June 1988.

NOLAN, JOHN J., University of Pittsburgh, 1942. Dr. Nolan was an obstetrician and gynecologist in the Fairfield County areas since 1952. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 20 January 1988 at the age of 72.

RICCIO, JOSEPH S., St. Louis University, 1937. Dr. Riccio was an anesthesiologist in the New Haven area since 1939. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 15 June 1988.

ROSENBERG, SAUL, American University of Beirut, 1939. Dr. Rosenberg was a dermatologist in the Fairfield County area since 1946. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 1 June 1988.

SELEMAN, ALDEN, Georgetown, 1955. Dr. Seleman was an emergency medicine physician in the Litchfield County area since 1959. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 23 May 1988.

STANDISH, E. MYLES, Harvard 1922. Dr. Standish was a dermatologist in the Hartford County area since 1923. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 22 April 1988 at the age of 91.

THAYER, JOHN E., College of Medicine, U.V.M., 1943. Dr. Thayer was a pathologist in the Hartford County area since 1947. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 10 June 1988.

WILSON, WILLIAM A., University of Louisville 1928. Dr. Wilson was an internist in the Hartford County area since 1930. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 31 January 1988 at the age of 85.

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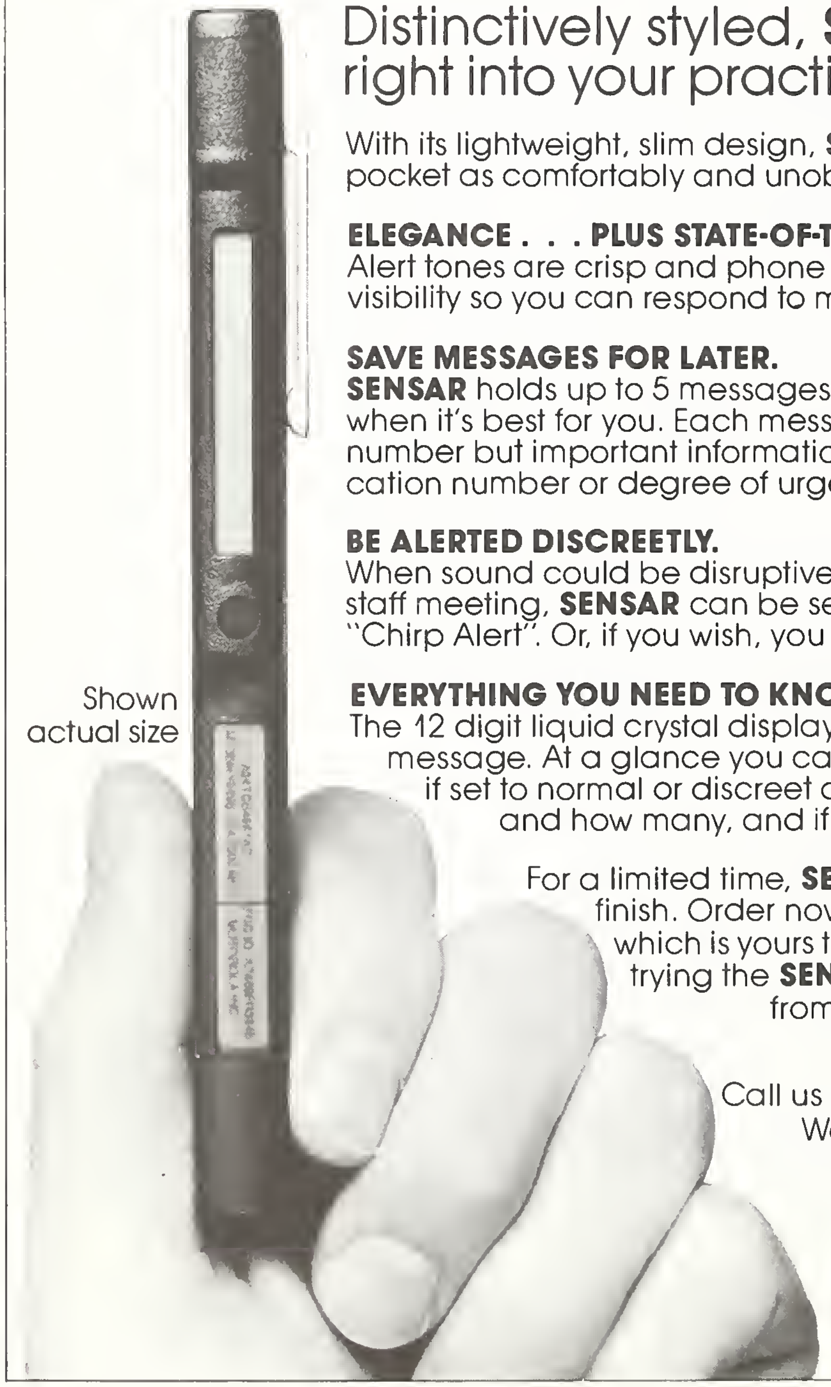
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Dec. '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC (Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

March '88. Age 74. Licensed in Connecticut. Nat'l bds. AB cert. MD, State University of New York; Int., Brooklyn Hospital, Brooklyn, NY; Res., Post-Graduate Hospital and Mt. Sinai Hospital, New York, NY (Surgery); Fellowship, Bowen-Brook Fellow in Surgery. NY Academy of Medicine. Has experience in malpractice claims review. Prefers group, associate, institutional or industrial type practice. Write, M. Judson Mackby, M.D., 82 Saunders Lane, Ridgefield, CT 06877.

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July '88. Age 33. Nat'l bds. AB elig. MD, Hanneman University, Philadelphia, PA; Int. and Res., University of Massachusetts Medical Center, Worcester, MA. Prefers group or institutional type practice. Write, Andrea Resciniti, M.D., 4 Duncannon Ave., Apt. #9, Worcester, MA 01604.

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Negative Gallium 67 Uptake with *Pneumocystis Carinii* Pneumonia

G. UMBERTO MEDURI, M.D., CRAIG CONOSCENTI, M.D., JOSEPH RIENZI, M.D., CHRIS MCGARY, M.D., AND MARVIN DEN, M.D.

ABSTRACT—When *Pneumocystis carinii* pneumonia (PCP) is clinically suspected, gallium 67 scintigraphy has been shown to be a sensitive screening test (94-100%). Depending on the degree of gallium uptake, the specificity ranges from 70 to 90%. We present a case of biopsy-proven PCP with a rapidly progressive bilateral infiltrate on chest radiography and a negative gallium 67 scintigraphy. We are unaware of any reported case of PCP with an abnormal chest radiograph and a negative gallium 67 scintigraphy.

Introduction

PULMONARY involvement of infectious or noninfectious origin is frequently encountered in the acquired immunodeficiency syndrome (AIDS).[1,2,3] *Pneumocystis carinii* pneumonia (PCP) is the most common opportunistic infection and requires demonstration of the organism either from washings or tissue obtained at bronchoscopy or open lung biopsy. Two noninvasive techniques, pulmonary function testing and gallium 67 scintigraphy, have been used to screen AIDS patients with pulmonary complaints and a nondiagnostic chest radiograph.[4]

While gallium 67 scintigraphy is nonspecific, it has been shown to be very sensitive in the early diagnosis of PCP when the chest radiograph may appear normal. A positive gallium 67 scintigraphic scan indicates acute inflammation and suggests the need for more specific investigative procedures.

Case Report

A 54-year-old male IV drug abuser with a previous history of subacute bacterial endocarditis was admitted to Norwalk Hospital on 26 December 1985 with a complaint of increased difficulty breathing, nonproductive cough, and a 15 lb weight loss. The patient denied fever, rigor, chest pain, wheezing, peripheral edema, orthopnea, gastrointestinal symptoms, or adenopathy. He also denied IV drug abuse for the last 18 months, homosexual activity, or blood transfusions.

He had previously been admitted in April 1984 with a one-month history of fever, increased sweating, and weight loss following a dental extraction. Workup revealed lactobacillus-positive subacute bacterial endocarditis with echocardiographic evidence of tricuspid valve vegetations. A chest radiograph showed a left lower lobe infiltrate with a gallium uptake only in the involved area. He was treated with penicillin intravenously for a period of four weeks, with clinical improvement and resolution of the pulmonary infiltrates.

Five months following his discharge from the hospital he was readmitted with fever and hypotension. Blood cultures grew non group D alpha streptococcus. On physical examination he was found to have generalized lymphadenopathy, and a gallium 67 scan showed uptake in the right axillary and left hilar region. Poor dentition was felt to be the source of recurrent infections, and he underwent multiple tooth extractions and received another course of intravenous penicillin.

Six months later, in March 1985 he was readmitted with fever, nonproductive cough, and a bilateral mixed alveolar-interstitial infiltrate on chest radiograph. A computed tomographic scan of the chest revealed a cavitary lesion in the left lower lobe and a nodular density in the right lower lobe; this was felt to be secondary to septic embolization from tricuspid valve endocarditis. Blood cultures grew non group D alpha streptococcus and again he responded to a four week course of intravenous penicillin administration. The chest radiograph cleared with treatment. The patient was followed for the next nine months in the medical clinic. Three weeks prior to this admission, two sets of blood cultures exhibited no growth.

On this last admission his vital signs were normal and he was afebrile. An examination of his chest revealed bilateral basilar crackles with minimal wheezing at the end of expiration. The remainder of his physical examination was noncontributory.

Laboratory tests showed the following: WBC 7500 cells/cu mm with a differential of 57% polymorphonuclear cells, 4% band forms, 32% lymphocytes, and 7% monocytes. A chest radiograph showed bilateral interstitial infiltrates. Resting hypoxemia (PO^2 58 torr) with normal acid-base status was seen on arterial blood gas analysis.

Immediately after admission his temperature rose to 39° C and three of three blood cultures were positive for non group D gamma streptococcus. The patient was given intravenous penicillin, 2 million units every four hours, and became afebrile and asymptomatic. Three weeks later, however, his temperature rose to 38° C. His fever was believed to be drug related, and the antibiotic was changed to intravenous cephapirin, 2 gm every four hours; his fever persisted despite this last change and all antibiotics were discontinued during the fourth week after admission.

In an attempt to discover the cause of his fever, a gallium 67 scan was performed, which was negative. The patient became increasingly short of breath with the associated development of a rapidly progressive bilateral alveolar infiltrate (see Figure 2). Arterial blood gases revealed resting hypoxemia ($Pa0^2$ 44mm Hg). Flexible fiberoptic bronchoscopy was scheduled, but because of the continued progression of hypoxemia and dyspnea, the procedure was cancelled and the patient was admitted to the critical care facility where mechanical ventilation was instituted.

An open lung biopsy was performed; specimens taken from the left lower lobe showed areas of chronic inflammation and organization. There were increased numbers of histiocytes and chronic inflammatory cells, and silver strains were positive for *Pneumocystis carinii* (see Figure 3). All other stains were negative. The patient was given specific therapy immediately upon return to the intensive care unit.

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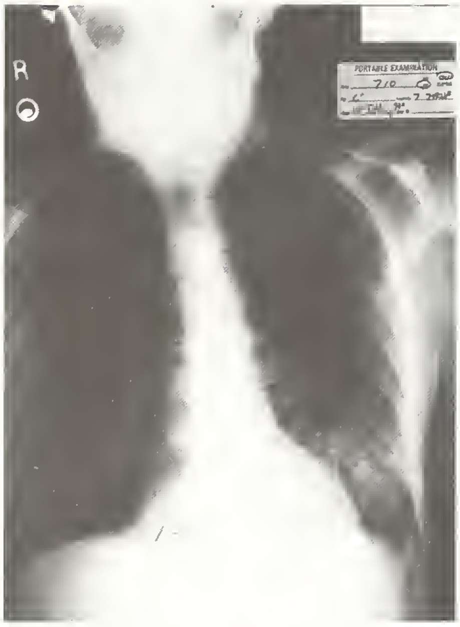
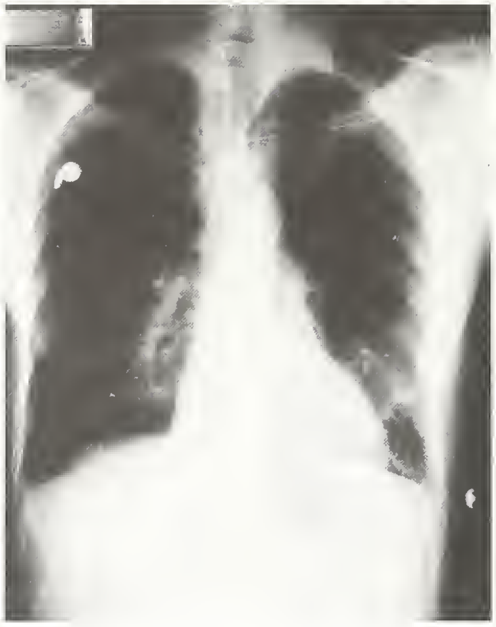
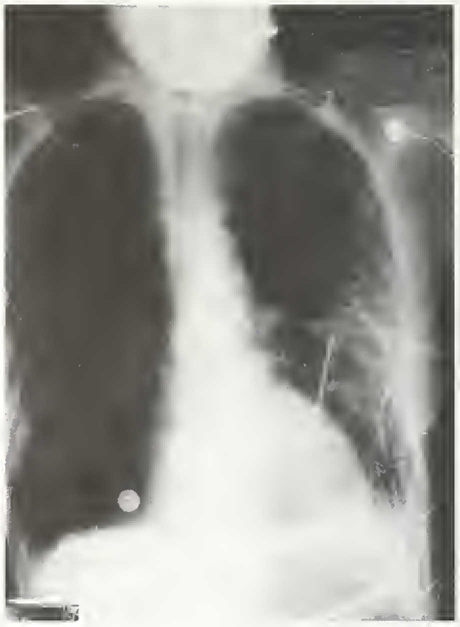


A) Chest radiography: one week prior to gallium 67 scintigraphy.



B) Chest radiography: at the time of the scintigraphy.



C) Chest radiography: one week following scintigraphy.

Discussion

To the best of our knowledge this is the first known case report of a biopsy-proven PCP presenting with a negative gallium 67 scintigraphy and an abnormal chest radiograph. PCP is the most frequent opportunistic pneumonia in patients with AIDS. Chest radiography usually shows diffuse infiltrates, but may be normal in up to 14% of the cases.[1]

Gallium 67 scintigraphy is a noninvasive test used to screen patients with AIDS who present with pulmonary symptoms and a nondiagnostic chest radiograph. The mechanism of gallium 67 uptake in PCP is not known, but may be related to uptake by inflammatory cells or by the *Pneumocystis carinii* organisms themselves. Gallium localization in inflammatory lesions has been attributed to its in vivo resemblance to ferric iron. Gallium 67 has been shown to bind to the iron binding molecules lactoferrin, siderophores, transferrin, and ferritin.[6] Bacteria can take up gallium directly with their iron-binding molecules known as siderophores. Gallium bound to lactoferrin can also be incorporated into leukocytes. This lactoferrin can then be transferred to tissue macrophages.[6] Although inflammatory cells were present in the tissue obtained at open lung biopsy, no increase in gallium uptake was observed.

Diffuse pulmonary gallium 67 uptake in patients with AIDS is seen not only with PCP, but with diffuse bacterial pneumonitis, cytomegalovirus pneumonia, disseminated histoplasmosis, miliary tuberculosis, and the adult respiratory distress syndrome. Other entities associated. with pulmonary uptake[8,9] of gallium 67 are shown in Table 1.

Table 1

CAUSES OF DIFFUSE GALLIUM-67 UPTAKE IN THE LUNGS

Sarcoidosis
Asbestos/Silicosis
Aspiration pneumonia
Bronchiectasis
Idiopathic interstitial fibrosis
Scleroderma
Lymphangiography
Pulmonary toxicity secondary to drugs
  (Busulfan, Bleomycin, Methotrexate, Cytoxan)

A working system of grading gallium 67 uptake in the lungs has been proposed.[9-11] Normal pulmonary gallium 67 uptake is considered to be pulmonary parenchymal accumulation of the tracer that is equal to or less than that of the infrarenal soft tissue. In this patient, gallium 67 uptake in the lung was normal in spite of progressive infiltrates on chest radiography.

In several clinical settings, gallium 67 scintigraphy can give false results. With effective treatment of an inflammatory process, positive gallium 67 scintigraphs may revert to negative. Gallium 67 may also fail to concentrate in a chronic inflammatory focus such as chronic osteomyelitis or chronic abscess. Metabolic states of iron overload, as in hemochromatosis, may prevent gallium 67 uptake by saturating the available iron transport proteins. None of these factors were present in this patient, and except for increased hilar uptake, the whole body gallium distribution was considered normal (Figure 1). Recently Barron et al[5] reported a sensitivity of 94%. They reported one negative gallium 67 scintigraphy in a biopsy-proven PCP with a normal chest radiograph.

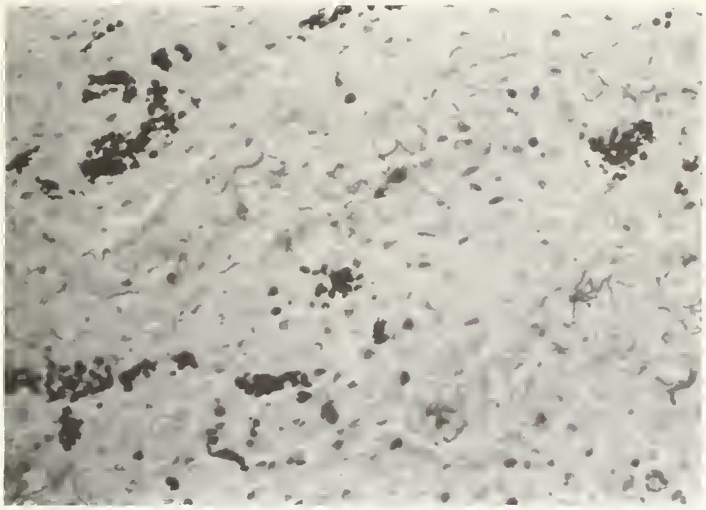


Figure 3

Pathologic specimen showing *Pneumocystis carinii* organisms.

Previous authors have reported 100% sensitivity of scintigraphy in the detection of PCP.[11,12] Coleman et al[11] reported 100% sensitivity and 90% specificity by accepting only scans with pulmonary gallium uptake equal to or greater than hepatic uptake. They also postulate that high sensitivity may not be maintained if the patient is scanned early in the course of the illness. The high specificity that has been suggested may be a function of retrospective analysis of a very select group of patients, and factors yet unknown may produce false negative results.

Conclusion

Diffuse gallium 67 uptake in the lung has been shown by many authors to be a sensitive tool in the noninvasive evaluation of patients with AIDS and suspected PCP. If the parenchymal uptake of gallium 67 is equal to or greater than that of the infrarenal soft tissue, the specificity is increased significantly.

False negative results have previously been reported in patients with normal chest radiographs. To the best of our knowledge, this is the first report of a gallium 67 negative chest radiograph positive biopsy-proven PCP in a patient with AIDS.

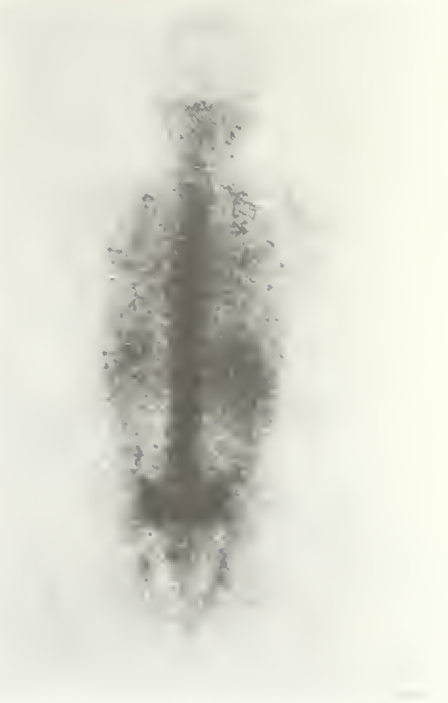


Figure 1

Negative gallium 67 scintigraphy showing pulmonary parenchymal uptake equal to that of the infrarenal soft tissue.

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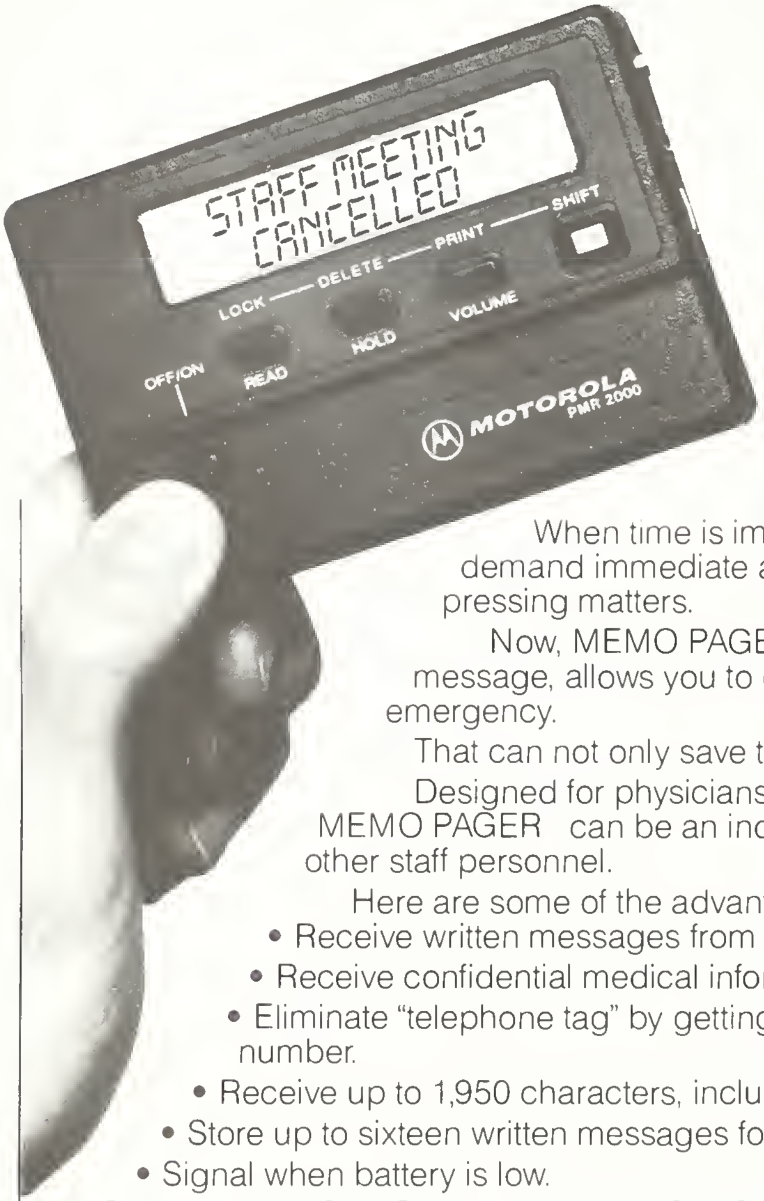

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Application of the Neodymium:YAG and KTP532 Lasers in Head and Neck Surgery

MARVIN P. FRIED, M.D. AND K.J. LEE, M.D.

EVEN though the carbon dioxide laser is the most common type of laser used by otolaryngologists, the neodymium:yttrium aluminum garnet (Nd:YAG) and potassium titanyl phosphate (KTP) lasers have also established themselves in the surgical armamentarium. Both of these devices offer a new, broader application to head and neck surgery as well as otology.

Laser Physics and Tissue Interaction

Both the Nd:YAG and KTP lasers are of the solid state family (the active material is a crystal doped with an impurity ion). The Nd:YAG uses a crystal of yttrium aluminum garnet that is doped with 1% to 3% of neodymium ions. The pumping lamp or light source is either xenon or krypton, and the wavelength emitted is 1064 μm. The KTP laser is a frequency-doubled Nd:YAG laser that is pumped with a krypton arc lamp. The 1064 μm wavelength is modified with a crystal of KTP to produce a 532 μm visible green wavelength.[1]

Both of these lasers have characteristics that differ from the carbon dioxide laser. The CO_2 laser light (10,600 μm) is highly absorbed in water, whereas the Nd:YAG and KTP laser lights are poorly absorbed and pass through water. The KTP laser is absorbed by hemoglobin, and similarly the Nd:YAG is absorbed by deeply pigmented tissues. The CO_2 laser vaporizes intracellular water, then causes carbonization by denaturing protein. The char produced interferes with further laser effect or can induce incandescence with hot spots of unwanted heat. The Nd:YAG laser energy absorption is improved with char formation.

The degree of energy scatter into tissue with the CO_2 laser is minimal due to the high water absorption. The Nd:YAG laser is scattered deeply while the KTP has an intermediate effect. Deeper scatter induces coagulation and thereby hemostasis, the most important surgical attribute at the tissue level of the Nd:YAG laser. The CO_2 laser can vaporize and incise tissues, while the KTP can vaporize, incise, and coagulate. The hemostasis achieved by the Nd:YAG laser seals vessels up to 4 mm to 5 mm in diameter, far better than can be accomplished by the CO_2 laser (up to 0.5 mm vessels) or by the KTP laser (1 mm vessels). As a consequence of the scatter, the major tissue effect of the Nd:YAG laser occurs below the surface. In similar surgical situations, the CO_2 laser will produce half as much surrounding tissue necrosis as the KTP laser, while the Nd:YAG will produce twice as much. For example, if the carbon dioxide laser causes 1 mm of tissue alteration, the KTP will cause 2 mm of effect, and the Nd:YAG, 4 mm at comparable power densities. The surgeon cannot easily appreciate the degree and depth of tissue alteration that is produced, and this becomes an important factor when transmural injury can occur, as in the tracheal wall.

With the sapphire tips attached to the end of the fiber, however, the Nd:YAG laser's energy can be channeled to more precision and less scatter (Figure 1). Specially designed handpieces facilitate the use of the Nd:YAG lasers in the nose, oral cavity, hypopharynx, and larynx (Figure 2). To achieve maximum cutting edge as well as hemostasis, these tips should be applied gently over the tissue planes. Excessive pressure will cause more bleeding.

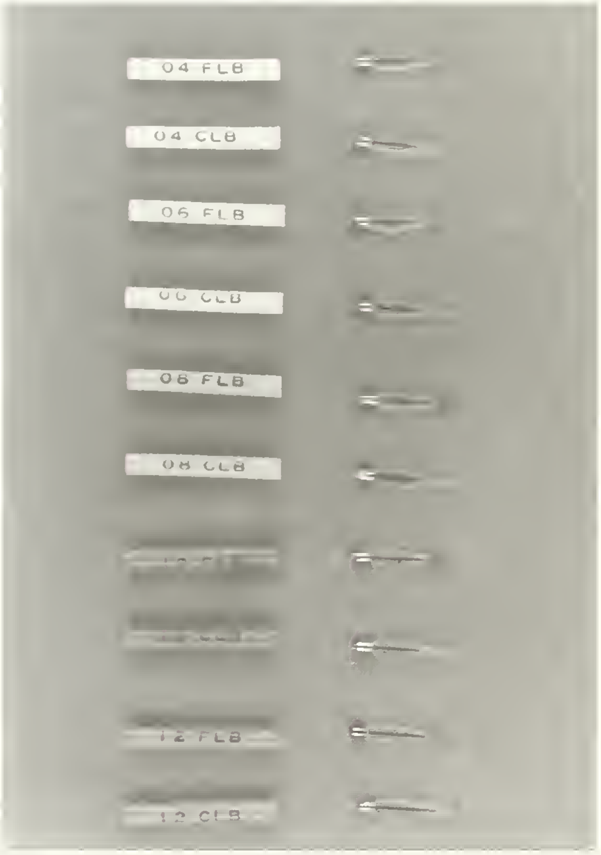

Figure 1

The Nd:YAG sapphire tips.

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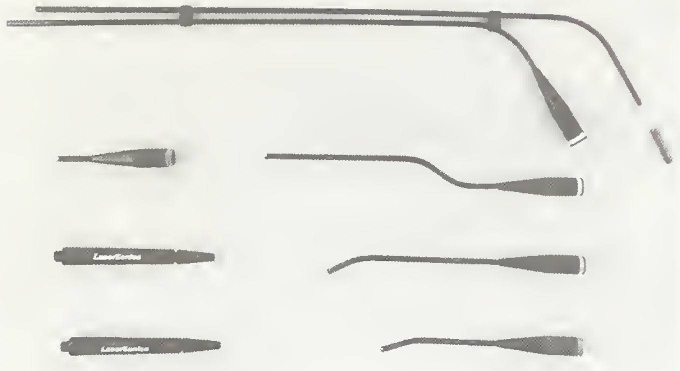

Figure 2

The Nd:YAG hand-held delivery systems.

The Nd:YAG surgical laser can achieve power output of 100 watts or greater, while the KTP laser power output is a maximum of 20 watts. When using the Nd:YAG laser with the sapphire tips, the usage power required is 20 watts delivered through the intermittent pulse mode, though it may be used at power settings as low as 10 watts for hemostasis.

An advantage of the Nd:YAG and KTP lasers is their ability to have their energy transmitted through flexible fibers. This allows for endoscopic surgery in the tracheobronchial tree as well as in the esophagus. Both lasers can be used in the handheld mode as well. This is easily accomplished with the KTP laser by direct use of this fiber in a contact mode. Little char is produced and cutting with hemostasis is achieved. The Nd:YAG can be fitted with a synthetic sapphire tip that focuses the lower beam, thereby increasing the power density and diminishing scatter and depth of coagulation. The KTP laser has the additional advantage of being able to be attached to an operating microscope, so that laryngopharyngeal and otologic procedures can be performed. With the power greatly reduced (1-2 watts) the KTP laser is precise, hemostatic, causing little surrounding tissue destruction, and making it highly effective for otology.

The Nd:YAG wavelength is invisible, therefore an additional aiming beam (usually of helium-neon) is used. The KTP uses an attenuated beam generated by the KTP laser itself so that the surgical beam and aiming beam are the same.

As with the CO_2 laser, continuous application of both the YAG or KTP lasers may produce excessive thermal injury and lack of surgical precision. Moreover, the free-beam or noncontact Nd:YAG effect is below the surface so that vaporization can lead to tissue explosion under continuous exposure. Repeat pulsations are highly effective and safe. Continuous exposure should be limited to incisions or when the depth of penetration can easily be assessed. Whenever possible, it is safer to utilize the Nd:YAG laser with the sapphire tips.

Clinical Application

The Nd:YAG laser has found its primary utility for otolaryngologists, pulmonary physicians, and thoracic surgeons in the ability to treat obstructing endotracheal and endobronchial lesions. The goal in most circumstances is the control of hemoptysis, reduction of dyspnea, reversal of obstructive pneumonia, and the reestablishment of a patent airway. The Nd:YAG laser is uniquely suited for this application because the flexible quartz fiber permits bronchoscopic access, and hemostasis can be achieved while allowing for tumor resection. The most common malignancy of the airway is epidermoid carcinoma, however, carcinoid tumors, adenoid cystic carcinoma, and metastatic lesions, among others, can produce obstructing symptoms and also have the potential for significant hemorrhage. Thorough photocoagulation of these tumors is mandatory before any manipulation is attempted. Benign tumors can, of course, be treated as well with less concern about bleeding.

A thorough preoperative evaluation of these patients helps the endoscopist to be prepared for surgery; the cardiac and pulmonary status, the degree of oxygenation as well as prior treatment (such as radiation therapy). The relative size and location of the tumor should be known radiographically and with computed tomographic scanning when applicable. (A lesion externally compressing the airway cannot be effectively and safely treated). Consultation with anesthesiology colleagues will help in the decision as to the best method of intraoperative care. Two possible techniques are open Venturi insuflation through an open-ended bronchoscope, or with a closed system by means of a ventilating side-port.

The Nd:YAG has been proven to be effective in treating tumors of the trachea and main bronchi.[4] The KTP laser, in contrast, has only recently been used for these lesions. The following cases are illustrative:

A 49-year-old male developed progressive shortness of breath, even at rest, as well as daily hemoptysis from a metastatic renal cell carcinoma tumor which almost completely obstructed the right mainstem bronchus. Rigid bronchoscopy with the use of the KTP laser via flexible fiber was undertaken. The tumor, which was quite friable and vascular, was coagulated, then mechanically debrided at 5-6 watts. The entire lesion could not be adequately resected. Postoperatively, the patient was treated for bronchospasm. After discharge, his ventilation improved and hemoptysis diminished. A repeat endoscopy one month later revealed almost total reduction of the tumor. The residual lesion was treated once again with the laser; the patient's hemoptysis subsided completely.

A 46-year-old woman noted increasing hemoptysis and moderate respiratory difficulty for six months. At endoscopy, a vascular obstructing mass was found in the subglottis and superior trachea. A biopsy showed an invasive papillary thyroid carcinoma. The KTP laser was used to remove the obstructing lesion in its entirety.

Resection of the tumor was declined by the patient and she was given external beam radiation therapy. No further hemoptysis occurred.

Tracheal stenosis may be caused by luminal granulation, fibrosis or webbing, or by loss of the integrity of the tracheal wall with collapse and narrowing. The former type of stenosis is amenable to laser resection by either the Nd:YAG or KTP lasers. Both lasers can photocoagulate and thereby resect the obstructing region. Hemostasis is not critical in these lesions. Long stenoses, dense fibrosis, or severe contraction are difficult to treat by any modality, and may require multiple procedures or luminal stenting.

A stenosis due to a bottle-neck deformity with loss of tracheal wall support cannot be adequately improved with either laser. Indeed, the Nd:YAG may perforate the tracheal wall if there is loss of mural thickness. Any attempt at endoscopic correction of this type of stenosis will probably fail.[5]

Hemangiomas of the head and neck which involve the mucous membranes may interfere with deglutition or respiration. Childhood vascular malformation will frequently involute spontaneously; however, up to 15% of these lesions will persist into later life and may cause symptoms. Vascular lesions of the skin, such as port wine stains or telangiectasias, are effectively treated with the argon laser and potentially by the KTP laser because of the preferential absorption by oxygenated hemoglobin.[6]

Shapshay has reported the use of the Nd:YAG laser for photocoagulation of mucosal hemangiomas without attempting to excise or vaporize them.[7] These lesions shrink with subsequent variable sloughing of the overlying mucosa. Healing takes up to two to three weeks. When practical, the lesions are compressed with a glass slide to reduce the amount of blood flow and energy dissipation. Areas involved included the lip, buccal mucosa, pharynx, and larynx.

The KTP and Nd:YAG laser have been applied to many regions in the head and neck. Nasal and oral cavity papillomas have been excised in six patients with results comparable to the CO_2 laser. Using a bayonet handle with the laser fiber, the nasal turbinates have been coagulated and reduced in size without bleeding.

Within the oral cavity, palatal papillomas have been removed, as well as lesions of the floor and mouth. Four partial glossectomies were performed with minimal swelling and no bleeding.

Tonsillectomies performed noncontact with the Nd:YAG laser may have the advantage of diminished postoperative pain. There is less blood loss in Nd:YAG tonsillectomies (approximately 50 cc) than the scalpel-scissor technique (250 cc). However, the benefit over current cautery techniques has yet to be explored. Twenty-two Nd:YAG laser tonsillectomies have been performed by the authors with encouraging results. In patients undergoing uvulopalatopharyngoplasty, the lack of even moderate bleeding facilitates the surgery, defining plans clearly and allowing for improved measurement of tissue resection. These patients experience less tissue edema and less postoperative pain. Lingual thyroidectomy and lingual tonsillectomy have been accomplished by this method.

The Nd:YAG laser with the sapphire tips gives a precise sharp dissection plane with practically no bleeding. Unlike electric cautery, there is no potential of damaging nearby vital nerves through electric conductivity. Its thermal and optical energy cuts through the tissues. Our next protocol is to utilize the Nd:YAG laser for resection of vascular tumors in the head and neck region, to utilize it for neck dissection, parotidectomy, thyroidectomy, and for other delicate soft tissue dissections.

Potential complications

The possibility of a serious complication as a consequence of laser surgery must always be a consideration. The safe use of the laser can be accomplished without much difficulty if the surgeon and operating room personnel are mindful of the correct usage of equipment and application as well as proper protection to all involved.

Whether the Nd:YAG or KTP laser is used, eye protection appropriate to the wavelength is mandatory for the patient and all personnel in the operating room. Warning signs and limitation of cross-traffic in the operating suite is imperative. The degree of eye hazard to nonoperating staff is less with endoscopic as compared to "open" surgical procedures.

Regardless of the laser wavelength, hypoxemia, hemorrhage, perforation, and fire are the most serious risks of bronchoscopic laser surgery. The patients who require this procedure may have compromised ventilatory function, airway obstruction to some degree, and possible pneumonia. The addition of general anesthesia may further promote aspiration, and certainly any bleeding into the airway can be life-threatening.

Close monitoring of the patient's cardiorespiratory parameters by the anesthesiologist is crucial. Any bleeding can cause hypoxemia and therefore must be attended to. Thorough photocoagulation of the lesion prior to manipulation will diminish the likelihood of hemorrhage. Perforation of a large vessel is a potential hazard but occurs rarely if the depth of laser penetration is controlled and intermittent pulses rather than continuous exposure is used. The endoscopist should be always mindful of the anatomical relationships of the major vessels to the airway, including the aorta, innominate artery, and the pulmonary arteries. This awareness of anatomy and depth of tumor penetration as well as infiltration of the disease process will assist in avoiding perforation of the tracheobronchial wall.

An airway fire is a catastrophe and may occur if any combustible material is on the line of the laser and if oxygen is available to support the fire. Use of a rigid metal bronchoscope, rather than a flexible fiberoptic endoscope is an important safety feature. Any potential ignitable object in the operative field should be moist or not directly exposed to the laser. Metallic or metal coated endotracheal tubes have the least potential for a fire; however, direct and continuous exposure to the laser may heat the metal.

The most effective method of preventing complications is adequate and thorough preparation of all those involved with the procedure before the case begins. The equipment should be functioning properly and alternative techniques should be considered if the laser fails to function. A strategy should be planned in case a complication (such as a fire) should occur.

The laser is a device that can assist the head and neck surgeon to perform numerous procedures expeditiously and effectively if the basics of laser principles, tissue interaction, and safety are remembered and adhered to.

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If there are any questions relative to your DEA registration, or to any other matter which you wish to discuss with the DEA, call Hartford 240-3233 or write to the Drug Enforcement Agency, 450 Main Street, Room 628, Hartford, CT 06103.

Use of the Nd:YAG Laser in a Community Hospital to Treat Lesions of the Gastrointestinal Tract

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RONALD J. VENDER, M.D., AND MYRON H. BRAND, M.D.

ABSTRACT—Experience with a Neodymium-yttrium-aluminum garnet (Nd:YAG) laser during the first 20 months of its operation at the Hospital of St. Raphael was reviewed retrospectively. A total of 44 patients were treated. Thirty-eight (86%) had lesions of the gastrointestinal tract, the most common being carcinomas of the esophagus (18 patients) or rectosigmoid (nine patients). Dysphagia was relieved in 67% of patients with esophageal carcinoma. Obstruction was relieved or averted, and bloody mucous discharge stopped in 89% of patients with carcinoma of the rectum or sigmoid colon. One major complication occurred, a fatal perforation of the esophagus in a patient with esophageal carcinoma. Nd:YAG laser therapy can provide safe and effective palliative therapy for esophageal and rectal carcinoma in a community hospital setting.

Introduction

OVER the past ten years there has been increasing interest in applying laser technology to clinical gastroenterology. European studies, including those by Kiefhaber[1] and Swain,[2] showed promising data for the therapeutic role of the Nd:YAG laser in the treatment of upper gastrointestinal hemorrhage. In this country, Fleischer[3] and Cello[4] expanded the indications for the use of laser technology to include neoplasms of the esophagus and colorectum. With this expanding role of laser technology there has been a proliferation of laser instrumentation. By 1985 there were over 300 Nd:YAG laser centers in the United States, with half located in community hospitals. To date, however, there have been few reports concerning the experience with endoscopic laser therapy in community hospitals. This report reviews the indications for, results of, and complications of laser therapy for lesions of the gastrointestinal tract at the Hospital of St. Raphael over a 20-month period.

Methods

The records of the first 44 patients treated with Nd:YAG laser therapy between January 1985 and August 1986 were reviewed retrospectively. The Hospital of St. Raphael is a 482 bed community hospital serving the New Haven area. Nine physicians had privileges to use the Nd:YAG laser: five gastroenterologists, one pulmonologist, and three general surgeons. The Nd:YAG laser employed was a Cooper Lasersonic (Santa Clara, California), model 8000, with a maximum power output of 125 watts. Power outputs employed for each patient ranged from 60-100 watts with pulse duration ranging between 0.2 seconds to continuous.

Since Nd:YAG laser therapy in gastrointestinal tract malignancies is palliative, all patients were first evaluated for curative resections by an oncologist or surgeon (usually both). The patients were considered inoperable because of widespread or metastatic disease, the high risk of surgery with advanced disease, and refusal of surgery by the patient or those responsible for the patient. All patients had appropriate radiologic evaluation (plain films, computed tomographic scans, contrast studies) before laser therapy, and in all cases the histology of the tumor was known.

The sources of clinical information used in the review include the log book maintained in the laser treatment facility, the patients' hospital chart, and written endoscopy reports. The 44 patients underwent a total of 131 Nd:YAG laser treatment sessions. Of these, gastroenterologists administered 112(86%); surgeons, 11(8%); and the pulmonologist, eight (6%). Forty-eight percent of the procedures were performed on an outpatient basis. In the last six months of the study, the figure rose to 65%. The technique of laser treatment varied among physicians. However, for malignant obstruction of the esophagus, the gastroenterologists usually followed the technique described by Fleischer.[3] Since all tumors were partially or completely obstructing, the aim of therapy was to create a patent lumen. If the endoscope could be insinuated into or through the tumor (nonobstructing), therapy was directed to intraluminal tumor in areas where obstruction seemed imminent. This was done by inserting the instrument deeply into the malignant stricture and aiming the laser circumferentially while

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gradually withdrawing. Tumor was considered to be "partially obstructing" if an endoscope (9-11 mm diameter) could not be passed through the area or if a patent lumen could be seen beyond the tumor from the furthest point of advancement of the instrument. In this situation, treatment was repeated every two or three days until a lumen wide enough to allow passage of the endoscope was created. The end point of each laser treatment was based on tissue effect as judged by the physician, and not on energy output as registered by the laser computer.

In treating tumors of the esophagus, dilators passed over a guide wire were often used in tandem with laser therapy, both to remove sloughed tissue and to dilate an area of stenosis. Restoration of a patent lumen, demonstrated by passage of the endoscope through the tumor into the stomach, was usually considered the end point of laser therapy. Bougienage was then used to maintain patency. Most patients had been treated with external beam radiation prior to laser therapy. Those who had not yet received radiotherapy were referred to a radiation oncologist at the conclusion of laser therapy.

Patients with obstructed or bleeding rectosigmoid carcinomas were only considered for Nd:YAG laser therapy if they: 1.—were at high risk for surgery because of age or cardiopulmonary problems, 2.—had overwhelming distant disease, 3.—had an unresectable primary tumor, or 4.—refused other forms of therapy.

When sessile adenomas of the rectum or sigmoid were ablated using the laser, close follow-up was necessary. These patients were reendoscoped at intervals of three to 12 months with further treatment given to recurrent adenomatous tissue as necessary.

Results

Patients are characterized by primary diagnosis in Table 1. A majority were treated for cancer of the esophagus or rectosigmoid. The three patients with non-neoplastic bleeding lesions of the gastrointestinal tract (two with angiodysplasia and one with a bleeding gastric ulcer) were treated during the first four months the laser was in operation.

Table 1

USE OF THE Nd:YAG LASER FOR LESIONS OF THE GASTROINTESTINAL TRACT AT THE HOSPITAL OF ST. RAPHAEL, JANUARY 1985 TO AUGUST 1986

Primary Diagnosis	*No. of patients*	*%*
Esophageal carcinoma	18	(47)
Rectosigmoid carcinoma	9	(24)
Rectal adenoma	7	(18)
Gastrointestinal angiodysplasia	2	(5)
Gastric ulcer	1	(3)
Gastric adenoma	1	(3)
Total	38	(100)

* In addition, six patients with endobronchial cancers were treated.

All of the patients with esophageal carcinoma had clinically significant obstruction causing dysphagia for solids, and several suffered recurrent aspiration pneumonia. Obstruction was documented with radiologic contrast studies or endoscopically. Few, if any, could take any solid food at all. While some of the tumors were bleeding, this was not the primary reason for laser therapy in this subgroup of patients. Patient characteristics are shown in Table 2.

Table 2

LASER THERAPY FOR ESOPHAGEAL CARCINOMA, PATIENT CHARACTERISTICS

No. of patients (M:F)	*18(11:7)*
Mean age, years (range)	*69.5(40-86)*
Histology	
squamous-cell carcinoma	9
adenocarcinoma	8
carcinosarcoma	1
Location	
upper third	4
middle third	6
lower third	8
Mean length, cm (range)	6.6 (2 - 11)
Degree of obstruction	
Partial	11
Total	7

Table 3 shows that patency of the esophageal lumen was achieved in 15 patients (83%), requiring a mean of two to three sessions. Improvement in swallowing or relief of dysphagia occurred in 12 patients (67%). Improvement, when it occurred, was clear-cut and was reflected in improvement in the patients' oral intake. Four of the 12 patients who had clinical improvement have required a second course of therapy for recurrent obstruction one to six months after the initial therapy.

Table 3

LASER THERAPY FOR ESOPHAGEAL CARCINOMA, RESULTS. TOTAL NUMBER OF PATIENTS—18

	No. patients	*%*
Technical success	15	83
Clinical success	12	67
Clinical failure due to extrinsic compression or submucosal location of tumor	4	22
Major complication or death*	1	5.6

* One fatal perforation of the esophagus occurred. See text.

There was one death related to laser therapy. It occurred in a patient with a long squamous cell carcinoma in the proximal third of the esophagus. This patient developed chest pain, dyspnea, and fever shortly after treatment. A pneumothorax was present, and a contrast study demonstrated a fistula between the esophagus and the right pleural space. Empyema, mediastinal abscess, and death followed. At the start of this patient's treatment session there was an unsuccessful attempt at bougienage. A second patient developed chest pain associated with subcutaneous emphysema after laser treatment. Chest x-ray films showed a pneumomediastinum and a partial left pneumothorax. This patient was treated with intravenous antibiotics for one week. There was no fever, and the chest pain resolved in one day. Although she remained symptomatic, the laser therapy was discontinued. One other patient developed an empyema three and a half months after laser therapy and two months after radiotherapy. Contrast studies failed to demonstrate a patent fistula. The empyema was successfully treated with closed chest tube drainage.

The results in nine patients treated for rectosigmoid carcinoma are listed in Table 4. Most patients had both obstruction and troublesome discharge. In all cases except one, passage of blood or mucous per rectum stopped after only one treatment. In the last patient the discharge stopped a week after the last laser treatment when the patient was given loperamide. Results in relieving or averting obstruction were good. One patient, however, elected to go to surgery for a colostomy because of recurrent symptoms of colonic obstruction several weeks after each of two courses of laser therapy. Although a third course of laser therapy might have opened the lumen again, this must be considered a treatment failure. In seven of nine patients therapy was considered to be successful and complete in one to three sessions (mean, 2.6). Several patients required retreatment within three to six months. This was accomplished in one or two sessions. The longest duration of follow-up is 12 months.

Seven patients with sessile colonic adenomas are being treated and followed. The longest follow-up in this group is only 16 months, but our early experience has been that the laser is successful in removing flat adenomatous tissue not amenable to removal using the polypectomy snare.

Table 4

LASER THERAPY FOR RECTOSIGMOID CARCINOMA

No. of patients (M:F)	*9 (4.5)*
Mean age, years (range)	*76 (66-83)*
Location	
Rectum	4
Rectosigmoid junction	3
Sigmoid	2
Main indication for treatment	
Obstruction	6
Hemorrhage or discharge	2
Not specified	1
Success	8 (89%)
Major complication or death	0 (0%)

There have been no major complications (perforations, major hemorrhage, sepsis) in the gastrointestinal cases other than those described above. It is not uncommon for patients to experience some minor discomfort while the laser is in operation. Occasionally, residual discomfort has persisted for up to 12 hours. Other minor complications experienced by some patients included transient fever to 101°, abdominal distention due to air in the bowel, and the sensation of bloating.

Discussion

The Nd:YAG laser is particularly well suited for tumors in the gastrointestinal tract because it can be used to deliver large amounts of light energy in the near infrared range through an endoscope via a flexible quartz wave guide. The wavelength of the Nd:YAG laser at 1060 nm gives it a distinct advantage over both the Argon and CO^2 lasers because it achieves deeper tissue penetration. The desired tissue effects of coagulation and vaporization can be obtained by adjusting the laser energy output. It is these characteristics which makes the Nd:YAG useful in treating gastrointestinal hemorrhage and neoplasia.

Early investigators believed that the primary role of the Nd:YAG laser in gastroenterology would be to control upper gastrointestinal hemorrhage. Early uncontrolled studies in Europe were encouraging with over 90% effectiveness in controlling upper gastrointestinal hemorrhage.[1] However, when the Nd:YAG laser was scrutinized in controlled clinical trials the results were conflicting. In London, Swain's group reported a significant benefit to Nd:YAG laser-treated patients in decreasing the incidence of ulcer rebleeding, the need for surgery, and mortality.[2] More recently, in the United States, Krejis found no benefit to Nd:YAG laser treated patients for upper gastrointestinal hemorrhage.[5] Krejis attempted to reconcile these differences by noting differences in the control populations as well as the design of the two studies.

At the Hospital of St. Raphael, we elected not to use the Nd:YAG laser for treatment of upper gastrointestinal hemorrhage because of the conflicting data, and because of the availability of both bipolar and heater probe units. These instruments are reported to be as effective as laser therapy in treating upper gastrointestinal hemorrhage, but have the additional advantages of portability, ease of use, increased safety, and the potential for coaptive coagulation.[6,7] Our efforts were predominantly directed toward providing palliation in two different situations: obstructing cancer of the esophagus and of the rectosigmoid. These two malignancies carry relatively rapid mortality with a median survival of less than six months in the former and 18 months in the latter.[8]

Therapeutic options for esophageal carcinoma include esophagectomy with or without colon interposition, radiotherapy, bougienage, placement of a prosthesis, use of a bipolar tumor probe, and gastrostomy. Nd:YAG laser therapy has now been added to this list of palliative options. Laser therapy has been shown to significantly improve functional status and modestly prolong survival.[11] Various groups of investigators have reported success in palliating dysphagia using laser therapy in 70% to 100% of patients.[9,10] However, it is important to distinguish technical success, that is luminal patency, from clinical success which is improved swallowing. In our hands, with luminal patency being achieved in 83% of patients, palliation was provided to 67% of patients.

The explanations for this difference in technical versus clinical success include the presence of extrinsic tumor pressing on the esophagus causing it to collapse as soon as the endoscope is withdrawn, and an esophageal motility disorder due to tumor infiltrating the muscle wall and nerves.

Our experience with palliation in obstructing carcinomas of the rectosigmoid parallels that of the literature.

In 181 patients with obstructing rectal carcinoma, Tytgat[12] obtained palliation in 89%, and concluded that the Nd:YAG laser was an alternative to colostomy in nonsurgical candidates. Barkin[13] reached the same conclusions, but with the proviso that this procedure be reserved for those patients who would be likely to survive less than 15 months. We also found that the Nd:YAG laser was an excellent means of palliative therapy in patients not considered to be surgical candidates. Were were able to stop bloody discharge from the rectum reliably and almost immediately. Distal colonic obstruction, a complication that usually requires a colostomy in terminally ill patients, was averted or relieved in eight of nine patients(89%). The major drawback to this therapeutic approach is the necessity for close medical follow-up and repeated laser therapy sessions should the tumor rapidly recur.

Sessile rectal adenomas have been amenable to management with laser therapy. In the past, options have included surgical excision or electrocoagulation. Recent studies have shown that laser therapy compares favorably to these techniques and may provide a cure in 31% to 67% of cases depending upon type and size of lesion.[14,15] Our laser is now being used to treat these adenomas and initial results are encouraging. The major caveat is that one must be sure not to use the laser to treat a potentially curable rectal carcinoma originating in a benign adenoma. To guard against this we routinely biopsy all adenomas prior to laser therapy sessions.

In this series of 38 patients there was one major complication of perforation of the esophagus resulting in death. The risks of laser-related complications are related to the experience of the laser endoscopist, technique used (contact *v* noncontact), and extent of tumor involvement. One can expect an approximate 1% perforation rate in treating carcinoma of the esophagus with the Nd:YAG laser. This complication usually can be managed conservatively with nasogastric suction, hyperalimentation, antibiotics, and chest drainage as necessary.[16] Complications related to laser ablation of colorectal malignancies are more common but fortunately are less serious. They include hemorrhage, localized perforation, or rectal stenosis.

The question of whether laser therapy prolongs life was not addressed in this preliminary study. However, we were able to show that the Nd:YAG laser could satisfactorily relieve patients with obstructing carcinoma of the esophagus or rectum and improve the quality of their life. We also did not address the question of whether the Nd:YAG laser therapy was cost-effective. With current systems of reimbursement there may be a financial advantage to admit a patient with a diagnosis of malignant obstruction, initiate therapy with the laser, and discharge the patient within a few days if the treatments are well tolerated. Further laser therapy can be given as an outpatient. In our study, as we gathered more experience and confidence with laser use, 68% of treatment sessions were performed on an outpatient basis. Trends in the treatment of obstructing esophageal carcinoma are moving in this direction with the new one-session technique recently described by Dwyer and Pietrafitta.[17]

In conclusion, the 20-month experience with the Nd:YAG laser in treating lesions of the gastrointestinal tract at a large community hospital indicate that in selected patients laser therapy is safe and effective. It is an attractive alternative in malignant obstructing lesions where options are few and choices are difficult.

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Important Advances in Clinical Medicine

Ophthalmology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in ophthalmology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in ophthalmology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Ophthalmology of the California Medical Association and the summaries were prepared under its direction.

Evaluating Vision in Preverbal Children

CHILDHOOD vision screening has traditionally been done at ages three to five years, a time when children are finally old enough to tell us what they see. Disorders such as high or unilateral refractive errors, congenital cataracts, and strabismus often go undetected until a preschool vision check uncovers a longstanding loss of vision, or amblyopia. To prevent a permanent loss of vision, amblyopia must be diagnosed and treated early. The American Academy of Pediatrics and the American Academy of Ophthalmology recommend that, in addition to the newborn evaluation, all children have an eye examination by six months of age to evaluate visual fixation, ocular alignment, and the presence of eye disease. Children having questionable or unequal fixation responses would be referred for a more precise vision evaluation.

Although formal vision testing in infants and preverbal children has been difficult and often imprecise, the combination of clinical and research techniques currently available permits both early diagnosis and long-term monitoring of amblyopia and its response to therapy. The optokinetic nystagmus response, visual evoked response, preferential looking technique, and fixation pattern responses constitute the primary methods used at this time.

The optokinetic nystagmus response measures pursuit and saccadic movements. Controlling the size of black and white stripes provides an estimation of visual resolution acuity. The visual evoked potential basically records visual responses to stimuli such as checkerboard patterns and light flashes by measuring signals from scalp electrodes placed over the visual cortex. Preferential looking techniques are based on the fact that infants prefer looking at a spatial pattern, usually a grating of black and white stripes, rather than a homogeneous field. Visual acuity information is obtained by observing an infant's behavioral response to looking at grating versus nongrating stimuli as the size of the stripe is varied. Due to technologic, equipment, and personnel factors, the three techniques described are primarily research tools not readily available to most clinicians. The Teller acuity card, a modification of preferential looking developed to provide a rapid clinical technique for measuring infant vision, is now available to practitioners.

Fixation pattern evaluation is the technique used by most pediatric ophthalmologists to assess vision in preverbal children. A child views a target object—toy, picture, or cartoon—binocularly while the strength of the fixation in each eye is compared with the quality of fixation in the opposite eye. The child's general level of fixation is also compared with that expected for a visually normal child of the same age.

Visual acuity determinations can no longer be delayed until children reach preschool age. All children should have an initial vision screening by six months of age to detect ocular problems early. Those with possible vision loss should be referred for more complete visual assessment and treatment of amblyopia when present.

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Committee on Practice and Ambulatory Medicine: Vision screening

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Vision Loss in Pseudotumor Cerebri

BENIGN intracranial hypertension (pseudotumor cerebri) is a misnomer; any disease that produces detectable vision or visual field loss in 49% of patients and severe vision loss (20/200 or less) in 6% to 24% cannot be considered benign. Increased intracranial pressure (pseudotumor cerebri) is a diagnosis of exclusion requiring showing the absence of a space-occupying lesion; a cerebrospinal fluid pressure greater than 200 mm of water, with the fluid chemically and cytologically normal; and normal results on a neurologic examination except for a sixth nerve palsy, vision loss, or a low frequency hearing loss.

Retrospective reviews of patients with pseudotumor cerebri have revealed risk factors for vision loss. Patients showing high-grade or atrophic papilledema, subretinal hemorrhage around the optic disc with or without subretinal neovascularization, a high degree of myopia, anemia, hypertension, and age older than 35 years are at an increased risk of vision loss. Neither the patient's weight, sex, cerebrospinal fluid pressure, nor symptoms of paresthesias, headaches, transient obscurations of vision, diplopia, tinnitus, nor the presence of optociliary shunt vessels are predictive of vision loss.

The primary treatment of pseudotumor cerebri is medical: withdrawal of any offending agents, such as oral contraceptives or tetracycline; weight loss; and the administration of diuretics, carbonic anhydrase inhibitors, and corticosteroids. Many patients are intolerant of or noncompliant with medical management, progressively lose vision, or have persistent headaches on maximally tolerated medical management. Lumbar-perioneal shunting and optic nerve sheath decompression are surgical alternatives for such patients.

Lumbar-peritoneal shunting, which reduces the elevated cerebrospinal fluid pressure, is indicated for managing nonocular symptoms of pseudotumor cerebri such as headache. Complications of lumbar-peritoneal shunting include shunt failures, low pressure headaches, and pain. Technically, placing a lumbar-peritoneal shunt can be difficult in the typical patient who is obese.

Optic nerve sheath decompression is an effective means of preventing vision loss. Optic nerve sheath decompression requires exposing the optic nerve by a medial orbitotomy and cutting a window or slits in the dural sheath surrounding the optic nerve. Complications of optic nerve sheath decompression, while rare, include ischemic optic neuropathy, diplopia, infection, abnormalities in pupillary function, and orbital hemorrhage. Decompression of the optic nerve is intended to prevent deterioration of vision in the surgically treated eye; therefore, surgery on both eyes is required in many cases. An optic nerve sheath decompression is usually not effective in managing nonocular symptoms such as headache.

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Current Status of Refractive Surgical Techniques

REFRACTIVE surgical techniques are designed to improve the accuracy of the eye's focusing system in nearsighted, farsighted, or astigmatic eyes with the goal of eliminating or at least reducing the strength of glasses necessary to correct these conditions. Because the cornea is the eye's most powerful refractive surface—80% of the focusing of parallel light rays is accomplished by the cornea and 20% by the lens—most refractive surgical procedures attempt to modify the curvature of the cornea. The most frequently done refractive surgical techniques are radial and astigmatic keratotomy and epikeratoplasty.

By far the most common refractive surgical procedure is radial keratotomy, where fine microscopic corneal incisions are made in a radial pattern around a central clear zone. This results in corneal flattening, which reduces myopia. Most patients undergoing the procedure now receive four to eight incisions instead of the 16 that were originally recommended.

When radical keratotomy is properly carried out on carefully selected patients, 80% to 90% of patients with low to moderate degrees of myopia can be corrected to 20/40 vision or better without spectacles (uncorrected). Patients with higher degrees of myopia can benefit from a significant reduction of their defect, but only 50% to 70% will achieve 20/40 uncorrected visual acuity. All studies have shown that older patients achieve more effect from radial keratotomy than do younger ones. Most patients who have had radial keratotomy do not achieve uncorrected 20/20 vision, and most of them continue to wear spectacles for activities such as driving.

Common undesirable side effects of radial keratotomy include glare, overcorrection and undercorrection, fluctuations in vision, and difficulties in fitting contact lenses after the operation. Serious complications leading to a permanent loss of vision have been reported but fortunately are rare. A substantial number of ophthalmologists regard radial keratotomy as being in the developmental stage and are not doing the procedure or recommending it. With more refinement, this technique may yield more precise results and few complications, thereby becoming more acceptable and adaptable for widespread use.

Astigmatic keratotomy to correct congenital, postcataract, and post-corneal transplant astigmatism has received increasing attention of late. The incisional patterns have become more standardized thanks to laboratory research, and early clinical reports are promising. The astigmatic corneal incisions are usually transverse and tangential ("T cuts"), rather than radial. Relaxing incisions and wedge restrictions are done in arcuate patterns and are used primarily for post-corneal transplant astigmatism.

In epikeratoplasty, a previously lathed superficial disc of human donor cornea is sutured over a patient's cornea, resulting in a new curvature that is either flatter, steeper, or smoother. Encouraging results have been reported in infants following the surgical excision of traumatic cataracts, in aphakic adults unsuitable for intraocular lens implantation, and in selected patients with keratoconus. The results in highly myopic patients have varied, and epikeratoplasty has not achieved the level of accuracy desired by most refractive surgeons. Considerable regression of the achieved effect has been reported in some patients. Epikeratoplasty for myopia is now being done by a small group of investigators who are refining the original procedure in an attempt to improve its accuracy and stability.

Radial and astigmatic keratotomy and the lathing of epikeratoplasty discs (and possibly even a patient's own cornea) can now be accomplished with potentially greater precision with the excimer laser, and laboratory investigations are currently under way in several centers in the United States and Europe. The possibility of improved accuracy with the excimer laser and the potential to modify corneal wound healing with new pharmacologic agents may improve the accuracy of refractive surgical techniques in the future.

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Assessing Vision in Patients With Alzheimer's Disease

ALZHEIMER'S disease is a disorder of unknown etiology affecting more than two million people in the United States. It produces devastating emotional, physical, and financial tolls on patients, their caretakers, and the community in general.

The diagnosis of "probable Alzheimer's disease" can be made clinically, but a histopathologic examination is required to make the definitive diagnosis. A patient generally has progressive memory problems and other cognitive deficits. Visual impairments have also been described, but these have usually been characterized as spatial agnosias and been attributed to deficits of cerebral cortex function. Impairments in contrast sensitivity and in the flash visual evoked potential have been described. Recent histopathologic evidence shows that Alzheimer's disease involves the primary visual pathways. Clinical studies have also found a variety of visual impairments in patients with Alzheimer's disease.

Patients with Alzheimer's disease often complain of difficulties in reading and visual orientation. Because patients with mild disease usually have near-normal Snellen visual acuities and normal-appearing optic nerve heads, however, their symptoms are usually dismissed as nonophthalmic. Studies have shown that although mildly or moderately impaired Alzheimer's patients have normal Snellen acuity, they have deficits in contrast sensitivity functions, visual evoked responses, and eye movement control. Patients with moderate or severe cognitive difficulties are more difficult to evaluate, yet it can be shown that they have the impairments described above to a more serious degree as well as dyschromatopsia and losses in visual acuity. In only the most advanced cases of Alzheimer's disease is optic atrophy noted. Future such studies may lead to the development of a battery of visual tests useful in distinguishing Alzheimer's disease from other common dementias. At present, one has to consider Alzheimer's disease in the differential diagnosis of bilateral optic neuropathy in a patient with dementia.

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Managing Congenital Cataracts

INFANTS, unlike adults, are visually immature. During the first two to four months of life, visual areas within the brain—the lateral geniculate nucleus and the striate cortex—are rapidly developing in response to visual information from the retina. A blurred or distorted retinal image during this critical period can result in abnormal neurologic development and permanent vision loss, clinically known as amblyopia. A cataract large enough to block the pupil will distort the retinal image, thus causing disruption of normal visual development and poor vision due to amblyopia. The presence of a cataract during the neonatal period is an opthalmic emergency, and a cataract should be surgically removed as soon as possible—that is, within the first few weeks of life.

Modern microsurgical techniques and pediatric anesthesia allow safe and effective early treatment of cataracts. Postoperatively, infants are fitted with extended-wear contact lenses to replace the natural lens removed during the cataract operation. In unilateral cases, the good eye is occluded part of the time to stimulate the vision of the amblyopic eye. Early detection and modern surgical techniques have dramatically improved the previously poor prognosis in these patients. Even infants who are intolerant of contact lenses can now be managed with the use of an epikeratophakic graft. A donor cornea is lathed into the shape of a contact lens and sutured onto the cornea, thus providing a "living" contact lens.

Even with the modern advances, the most important aspect of the management of congenital cataracts is early detection. Neonates should be routinely screened for a normal red reflex. Only through the cooperative effort of pediatricians and ophthalmologists can results be improved in this difficult group of patients.

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Update on Extended-Wear Lenses

THERE has been considerable interest in bacterial infections of the cornea associated with extended-wear contact lenses. These lenses are of a higher oxygen permeability that allows them to be worn overnight. Until recently, the lenses were approved for wear for as long as 30 days between removing and cleaning. Clinical experience, however, has shown that some patients can wear these lenses longer than 30 days without difficulty, whereas other patients have problems with overnight wear on a single occasion. A number of reports have noted serious gram-negative infections of the cornea—particularly *Pseudomonas*—occurring in both younger persons who wear the lenses for cosmetic reasons and older persons with aphakia, with the rate of serious eye infections and complications being greater in the aphakic group. Several reports have linked *Acanthamoeba* to serious corneal infections and ulcers occurring in extended-wear lens wearers who wear their lens daily. At higher risk are those who use homemade saline solutions for lens cleaning and those who bathe in nonchlorinated swimming pools and commercial whirlpools while wearing their lenses. Many eyes have been injured, and corneal transplantation needs to be done frequently to rehabilitate such eyes.

Contact lens-induced ulcers occur in about 2% to 7% of patients who use extended-wear lenses for aphakia. The rates are lower in the cosmetic extended-wear group, but the exact incidence is not known at this time. Studies are currently being done that will more clearly delineate the risk of infection in cosmetic wearers of these contact lenses.

There is considerable interest in using gas-permeable rigid lenses for extended-wear use. These are hard lenses that contain either silicone or fluorocarbon to make them more oxygen permeable. At this point, there is a trend towards the use of gas-permeable hard contact lenses in the extended-wear mode. Early results are encouraging, and certain lenses have been released by the Food and Drug Administration for noninvestigational use. Further experience with these lenses will need to be gained before they can become widely used.

The problems associated with extended-wear contact lenses underscore the importance of patients understanding that contact lenses are a medical device which requires meticulous care. If problems do arise, patients should remove the lenses immediately and seek qualified medical care because delayed treatment is associated with more severe complications.

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Update on Laser Treatment of the Anterior Segment of the Eye

FOR the past five years, the argon laser has been used in different ways to treat narrow-angle glaucoma and primary open-angle glaucoma. Iridectomy, a time-honored procedure designed to relieve acute angle-closure glaucoma and narrow-angle glaucoma, is now almost exclusively done with the argon and lately with the neodymium-YAG (yttrium-aluminum-garnet) lasers, except for those instances where corneal edema does not allow the laser beam to be effectively directed to the iris.

Argon laser trabeculoplasty was initially extensively done for the relief of uncontrollable primary open-angle glaucoma in patients in whom maximum medication is not controlling the intraocular pressure and there is evidence of visual field loss. The procedure essentially consists of applying argon laser spots at the junction between the pigmented and unpigmented trabeculum over 180 degrees of the trabecular circumference per session. It is done in an outpatient setting, and the patient is not restricted after the operation. The overall results of this procedure were initially encouraging. The reports of five years of follow-up of those patients show that in some, the intraocular pressure tends to rise again. The rate of success of this procedure over five years in one of the recent reports was 50%.

The use of the neodymium-YAG laser is well established for doing posterior capsulotomies after surgically excising a cataract. Basically, the posterior capsule left intact following an extracapsular cataract operation is used as a means of support for posterior chamber intraocular lenses. The posterior capsule may opacify over time, resulting in decreased visual acuity. Before the use of the YAG laser, it was necessary to introduce surgical instruments intraocularly to rupture the capsule. At the present time, the neodymium-YAG laser is used to disrupt the posterior capsule, creating an orifice through which clear vision is again possible. This procedure is done on an outpatient basis and is nonrestrictive postoperatively.

A great deal of attention has recently been devoted to the use of excimer lasers for corneal operations. This group of lasers emits ultraviolet irradiation capable of exciting molecules, forming dimers, and, finally, causing ablation of tissue. The argon fluoride laser emits at 193 nm and is capable of extremely smooth excisions of corneal tissue. A clinical model of this laser has been recently built and has been used to do a refractive surgical procedure similar to radial keratotomy in blind human eyes of volunteer patients.

Another application of the argon fluoride excimer laser essentially consists of reshaping the surface of the cornea to a new curvature, thereby compensating for a refractive abnormality present in the eye. This procedure has been carried out on nonhuman primates and shows promising initial results, although early opacification of the corneas has been reported. Similar procedures have been done on human eyes with infectious corneal ulcers to eliminate the infectious focus, and initial favorable results have been reported (R. Steinert, Harvard Medical School, Boston, and D. Aron-Rosa, Rothschild Institute of Ophthalmology, Paris, oral communications, November 1987). Even though these techniques show a promise in providing more accurate surgical procedures for correcting refractive errors, caution should be exercised, and evaluation of the long-term results in these patients is mandatory.

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Lens Implant for Small-Incision Cataract Operation

THERE have been numerous technologic advances in surgically excising cataracts that have, in the past several years, made the procedure safer, more predictable, and more visually satisfying to patients. The most important of these developments has been the widespread use of polymethyl methacrylate (PMMA) intraocular lenses rather than aphakic glasses or contact lenses. Another major development has been that of phacoemulsification. With this procedure, a cataract can be removed through a 3-mm incision instead of one about 9 to 10 mm. This can provide better control of wound healing and astigmatic distortion after the operation. To use a conventional intraocular lens after doing phacoemulsification, however, requires enlarging the smaller incision and thus losing the theoretic advantages. To retain those advantages, the intraocular lens must be introduced through a 3-mm opening, which has led to the recent surge of interest in soft or foldable intraocular lenses.

Interest in soft lenses began with hydrogel in the late 1950s, and the first implant was put in a human in 1976. The development of soft intraocular lenses was slow until 1984, when Staar Surgical made the first practical silicone lens implant and popularized its use. Since then, several other manufacturers have produced both silicone and hydrogel lenses, and all of these lenses are being implanted on an investigational basis only. One lens design uses the hard PMMA commonly used for lens implants and "hinges" part of the lens to pass through a 3-mm opening. Another company is working with temperature-sensitive polymers that can be rolled into a 2-mm tube that unrolls and rehardens inside the eye at body temperature.

These new intraocular lens developments have caused an increased interest in and the use of phacoemulsification for cataract removal. In addition, early reports would seem to indicate that the hydrogel and silicone lenses have similar complication rates to the standard PMMA intraocular lenses. These small-incision implants may have substantial future uses in the surgical treatment of cataracts, but long-term evaluation of their safety is needed. Both types of lenses are still in an investigational stage and, at present, the experience with silicone lenses is limited, with less than five years of follow-up, while knowledge of hydrogel lenses in patients is limited to just over ten years. Hence, more time is needed before these lenses can be shown to have the proven safety and efficacy of the existing standard PMMA lenses.

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Pneumatic Retinopexy

THE use of transconjunctival cryopexy and intravitreal gas injection (pneumatic retinopexy) in the office setting for simple rhegmatogenous retinal detachments with retinal tears in the superior retina (8 o'clock to 4 o'clock positions) has recently been proposed. This technique replaces standard scleral buckling, which requires an operating room. The localization of all the retinal holes is important for the placement of transconjunctival cryopexy and for postoperative head positioning. The expandable gas used for internal tamponade of the retinal holes is either sulfur hexafluoride (SF_6) or perfluoropropane (C_3F_8). Because of the differences in lipid solubility of these gases, the duration of the intraocular bubble will vary from 5 to 7 days for SF_6 to 14 to 21 days for C_3F_8. Patients are required to maintain head positioning for several days after the operation or longer at home to allow maximum apposition of the gas bubble to seal the tear(s). For multiple tears, several positions may be required during each day. An arrow may be drawn with a felt-tip marker on the eye patch, or even on the forehead, to assist the patient and family in proper head positioning.

The risk of the procedure includes extension of the retinal detachment into the macula, development of new retinal breaks at a site remote from the original break(s), and introcular infection—endophthalmitis. In a review of 100 consecutive cases, 84% were attached at six months, with the pneumoretinopexy failures surgically repaired by conventional scleral buckling, improving the overall success rate to 98%. Failure was caused by excessive retinal scarring and new or missed retinal breaks. Pneumatic retinopexy offers advantages in the management of uncomplicated superior rhegmatogenous retinal detachments.

This outpatient procedure reduces the morbidity of hospital stays, general anesthesia, and periocular trauma, resulting in an acceptable reattachment rate with no loss of ultimate anatomic success if a subsequent conventional scleral buckling is required. A careful preoperative examination to determine the presence of all retinal breaks, especially those in the inferior retina, and patient compliance with head positioning after the operation are the major factors in achieving anatomic success.

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Ovarian Cancer 1976 and 1981

A Tumor Registry Study

ROBERTA LAWRENCE, M.P.H.

ABSTRACT—Using minimal data from Tumor Registry files, all microscopically confirmed cases of primary ovarian cancer treated at Yale-New Haven Hospital in 1976 (N=30) and in 1981 (N=44) were analyzed for statistical differences. Seven parameters were chosen for completeness and importance of data: Year of diagnosis, Stage of disease, Surgery, Radiation, Chemotherapy, Histology, Age at diagnosis. Among the findings are that radiation therapy was used less in 1981 than in 1976 and that the combined modalities of surgery and chemotherapy with no radiation proved better for survival in 1981 than in 1976.

IN order to compare the survival experiences between two different cohorts, all diagnostically confirmed primary ovarian cancers diagnosed in 1976 and 1981 and treated at Yale-New Haven Hospital in those years were extracted from our computer files. This allowed for at least five years follow-up for each group.

The seven variables used represented the most complete and, therefore, probably the most general information available (Table 1). Stage of disease, for instance, was coded as local, regional, and distant, rather than using the F.I.G.O.* classification which has been implemented in our Registry only since April 1987. Surgery, radiation therapy, and chemotherapy were represented in their simplest form (yes or no).

Chi Square Tests

Chi square tests were performed comparing the 1976 cohort (N=30) with the 1981 cohort (N=44) (Table 1). The only statistically significant difference was in radiation therapy of any kind: 47% of those in 1976 had such therapy and only 11% of those in 1981 did (p=.001). The shift in treatment of ovarian cancer was evidently from surgery and radiation therapy to surgery and chemotherapy at the Yale-New Haven Medical Center.

Multivariable Analyses

A Cox multivariable regression analysis[1] was computed on each cohort. All six variables were entered into the model. It can be seen from Table 2A that in 1976 chemotherapy was the only significant prognosticator (p=.017) and the result favored those who had no chemotherapy.

In 1981, age at diagnosis was the most significant prognosticator in the multivariable analysis (p=.002) with stage of disease second (p=.03), and surgery third (p=.04). However, the fact that only one patient had no surgery and there was a small number of regional stages dictates caution in interpretation of the latter two.

Table 1

OVARIAN CANCER 1976 AND 1981

	1976		*1981*			
Variable	*N*	%	*N*	%	X^2	*p.val*
Stage:						
Local	8	27	15	34		
Regional	3	10	4	9		
Distant	19	63	25	57		
Total	30	100	44	100	0.46	0.80
Surgery:						
No	3	10	1	2	Fisher's	
Yes	27	90	43	98	Exact Test	
Total	30	100	44	100	p=0.30	
Rad. Therapy:						
No	16	53	39	89		
Yes	14	47	5	11		
Total	30	100	44	100	11.65	0.001•••
Chemotherapy:						
No	14	47	21	48		
Yes	16	53	23	52		
Total	30	100	44	100	0.008	0.93
Histology:						
Non-epithei	5	17	4	9		
Epithelial	25	83	40	91		
Total	30	100	44	100	0.96	0.33
Age at DX	Mean SD Min Max 56.6 13.81 17 77		Mean SD Min Max 56.9 16.4 13 87			

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* Federation Internationale de Gynecologie et d'Obstetrique

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Table 2A

OVARIAN CANCER - 1976 - COX REGRESSION ANALYSIS

30 Observations—23 Deaths—No missing observations

Variable°	*Value*	*N*	X^2	*p val*	*β*	*Prognosis*
Chemotherapy	0=No 1=Yes	14 16	5.68	0.017*	1.405	Chemo worse than No chemo
Stage	Local Regional Distant	8 3 19	3.45	0.063	0.629	Later stages worse than earlier stages but not significant
Age	Continuous	30	2.82	0.093	0.032	Older ages worse than younger, although not significant
Surgery	0=No 1=Yes	3 27	1.23	0.267	—	Never significant enough to keep in the model
Radiation Therapy	0=No 1=Yes	16 14	0.45	0.503	—	Never significant enough to keep in the model
Histology	0=Non-epithel. 1=Epithelial	5 25	0.00	0.957	—	Never significant enough to keep in the model

° Listed in order of significance

Table 2B

OVARIAN CANCER 1981 - COX REGRESSION ANALYSIS

44 Observations—21 Deaths—No missing observations

Variable°	*Value*	*N*	X^2	*p val*	*β*	*Prognosis*
Age	Continuous	44	9.38	0.002**	0.060	Older ages worse than younger ones
Stage	Local Regional Distant	15 4 25	4.71	0.030*	0.742	Later stages worse than earlier ones
Surgery	0=No 1=Yes	1 43	4.21	0.040*	−2.594	Worse for No Surg. than for Surgery, but only 1 patient in No Surgery category
Histology	0=Non-epithel 1=Epithelial	4 40	2.01	0.156	−1.712	Non-epithel worse than epithelial although not significant
Radiation Therapy	0=No 1=Yes	39 5	0.19	0.665	—	Never significant enough to keep in the model
Chemotherapy	0=No 1=Yes	21 23	0.00	0.970	—	Never significant enough to keep in the model

° Listed in order of significance

Table 3

OVARIAN CANCER - 5 YEAR BERKSON-GAGE SURVIVAL ESTIMATES

		1976				*1981*			
		Total	At 5 Years			Total	At 5 Years		
		N	N	B.G. Est.	S.E.B.G. Est.	N	N	B.G. Est.	S.E.B.G. Est.
		30	12	.40	.09	44	9	.48	.09
Stage:	Local	8	7	.88	.12	15	3	.66	.17
	Regional	3	2	.67	.27	4	1	1.00	.00
	Distant	19	3	.16	.08	25	5	.30	.10
Age:	<57	12	7	.58	.14	18	5	.65	.12
	>57	18	5	.28	.11	26	4	.37	.11
Surgery:	No*	3	(0	.00	.00)	1	(0	.00	.00)
	Yes	27	12	.44	.10	43	9	.49	.09
Radiation Therapy:	No	16	6	.38	.12	39	7	.48	.10
	Yes	14	6	.43	.13	5	2	.40	.22
Chemotherapy:	No	14	11	.79	.11	21	4	.66	.12
	Yes	16	1	.06	.06	23	5	.36	.11
Combination Therapies:	Surgery Yes Chemo Yes Rad. Ther. No	10	1	.10	.09	22	5	.38	.11

* All patients who had no surgery were dead by 1 year.

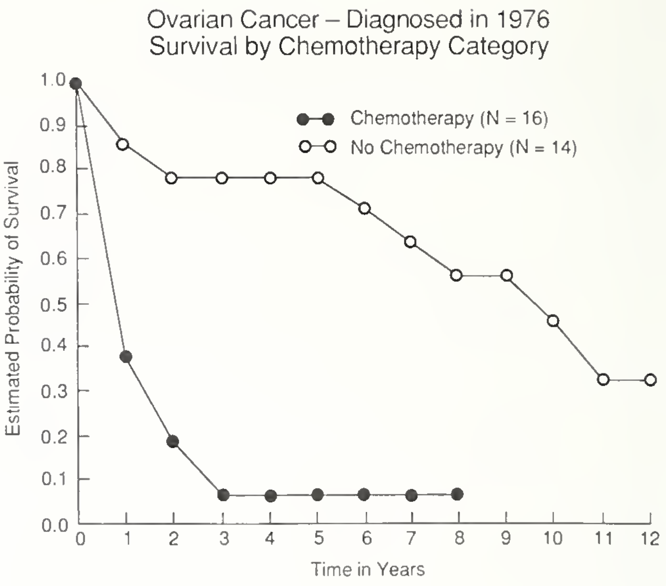
Survival Curves

Actuarial survival curves were then computed using the Berkson-Gage[2] method. Five-year survival estimates are shown in Table 3. Since radiation therapy was not as important a factor in ovarian cancer treatment as surgery and chemotherapy, the best treatment comparisons between the two cohorts would seem to be the combination modalities of surgery, chemotherapy, and no radiation.

The survival experiences between the two groups (Figures 1-5) were then compared, wherever there were enough numbers in each category, using the Gehan modification of the Wilcoxon test[3] with the following results:

Although the overall survival of the 1981 group (median=4.72 yrs.) was better than that of the 1976 group (median=1.75 yrs.) (Figure 1), the difference was not statistically significant. There were, however, some interesting differences. In 1976, for instance, the difference in survival between the group which had no chemotherapy and the one which did have chemotherapy was significantly better (p=.001) for those who had no chemotherapy (Figure 2).

Survival by age in 1976 (dichotomized at the mean of 57 years) (Figure 3), although not statistically significant, is interesting in that it shows a consistently higher survival probability for the younger patients in 1976 compared with those in the older than 57 years group. Also (Figure 4) we note that those in Stage 3 diagnosed in 1976 did not fare as well as those in Stage 3 diagnosed in 1981. Again, this was not statistically significant. Figure 5



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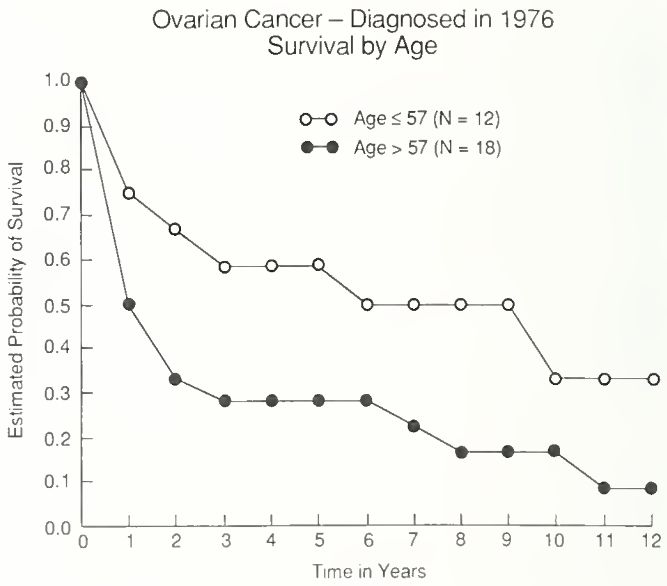

Figure 3

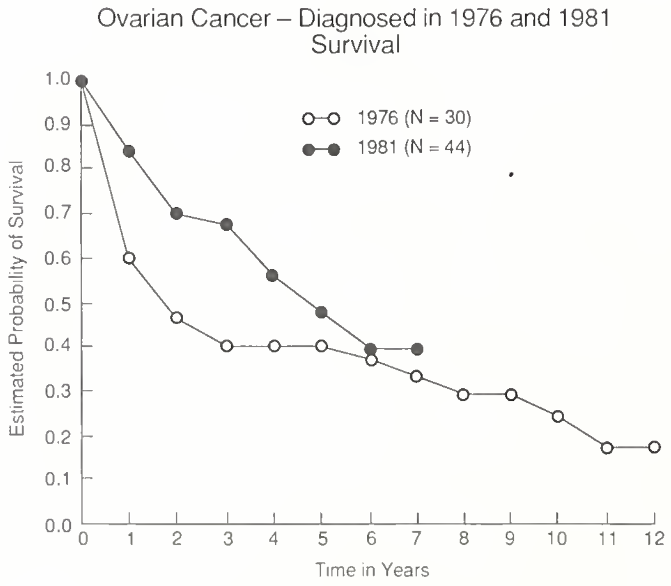

Figure 1

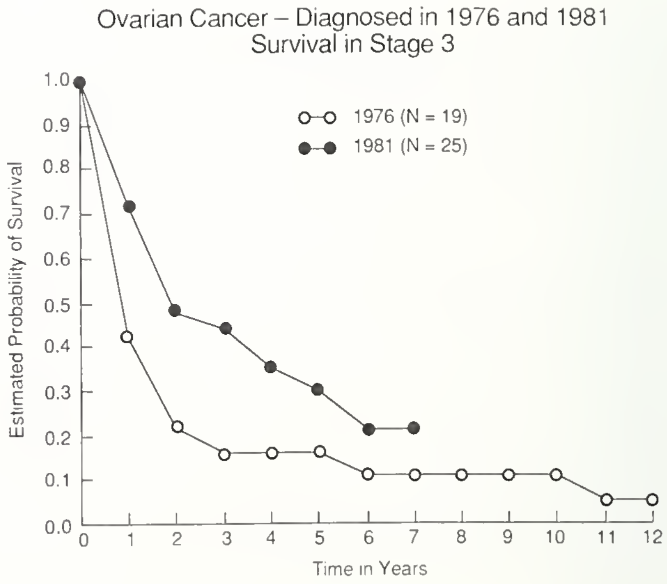

Figure 4

shows the difference in survival between the group in 1976 who had the combination of surgery, chemotherapy, and no radiation with those in 1981 who were treated with the same modalities. The difference is statistically significant (p=.015).

Ovarian Cancer – Diagnosed in 1976 and 1981
Survival by Surgery and Chemotherapy and No Radiation

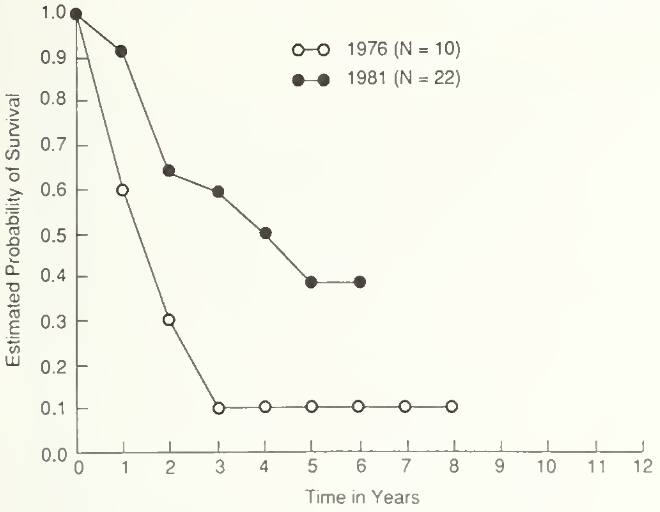

Figure 5

Discussion

It is important to remember that this study emanated from essentially seven variables, namely: year of diagnosis, stage of disease, age at diagnosis, surgery (yes/no), radiation therapy (yes/no), chemotherapy (yes/no) and histology (epithelial/nonepithelial tumors).

In 1976, only chemotherapy emerged as a significant prognosticator in the multivariable analysis. In 1981, age, stage, and surgery were significant. Although not identified as significant, stage of disease was important in 1976 as was age. Radiotherapy did not figure significantly in any of the survival comparisons. The fact that chemotherapy was a significant "bad guy" in the comparison of the survival experience of the 1976 cohort might reflect the fact that chemotherapy was relatively young then, and used in only the most advanced cases.

This exercise was undertaken to show that even with minimal information (no charts were read, and no type of surgery, chemotherapy, or radiation was determined) some interesting findings can emerge. Of course, one would need to look at the actual treatments used in order to complete the picture.

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The Physiatric Evaluation of Mobility

EUGENE MOSKOWITZ, M.D.

> **Mobilize** To excite quiescent material to physiologic activity—Stedman's Medical Dictionary, 24th Edition

THE physiatric evaluation of mobility entails a comprehensive review of the medical and social background of the patient, an assessment of the neuromusculoskeletal system in terms of "impairment"[1] of function, and the prescription of appropriate diagnostic and physiatric procedures to ensure maximal reduction of "disability" and active participation in a community setting compatible with the residual "handicap."

Distinction must be drawn between motor activity and function. While muscle action may be present in a particular segment of an extremity it does not necessarily imply compatible function unless the neuromusculoskeletal unit is intact. For instance, good voluntary motion in the hand in the absence of sensation, as in diabetic neuropathy, constitutes a severe functional deficit. Similarly, ambulation may be severely limited because of loss of position sense in the lower extremities while motor function is spared.

Primary Impairment of Mobility

In evaluating the patient with primary impairment of mobility, either in the upper or lower extremities, one must first consider the integrity of the nervous system. The advent of the computed tomographic scan has greatly facilitated the diagnosis of cerebral and cerebellar lesions. However, the absence of positive findings on initial scan does not preclude a developing lesion, such as a stroke in evolution. Based upon the location of the lesion, one can foresee certain peripheral symptoms and findings that will influence the mobility of the patient. For instance, anterior cerebral artery lesions are associated with greater paralysis in the lower than upper extremity in contrast to middle cerebral involvement where the reverse is true. The patient with parieto-occipital hemorrhage may not have any motor paralysis yet is unable to ambulate because of a severe hemisensory and visual deficit.

The axial skeleton acts as the vertical column and support for the appendages. Alteration in the dynamics of the spine and the shoulder and pelvic girdles will affect mobility in the articulated extremities. At times it may be difficult to determine where the primary impairment exists. For instance, an acutely painful sternoclavicular joint in a patient with rheumatoid arthritis will retard shoulder motion. In the elderly patient, spinal stenosis produces "neurogenic claudication" with restriction in ambulation. Conversely, the spinal stenosis may be a coincidental finding in a patient with severe osteoarthritis of the hips and associated thigh pain. Careful assessment of the functional deficit is essential in order to establish the appropriate treatment protocol.

Clinical evaluation of the extremities should include a functional assessment based upon a multisystem examination. This should include documentation of joint range of motion, active and passive, and motor assessment with differentiation between muscle weakness from disuse or debility and segmental paresis secondary to neurogenic involvement. At times this may be difficult to determine. For instance, a hemiplegic patient develops quadriceps paresis secondary to a retroperitoneal hemorrhage while receiving anticoagulant therapy. The pattern of weakness corroborated by electromyographic examination should make the diagnosis readily evident. Similarly, residual shoulder girdle paralysis in the hemiparetic upper extremity with good hand function suggests a superimposed complication particularly if the patient was unconscious and developed an upper brachial plexus palsy due to pressure or traction.

Contractures pose a serious problem in ambulation. Hip and knee contractures may be of long standing duration as in osteoarthritis or may develop following a relatively short period of immobilization. Sitting in a chair is not equivalent to mobilization. It contributes to hip and knee flexion contracture and equinus deformity of the ankle. It may be difficult to determine the primary site of the problem since the biarticular muscles of the lower extremity can simultaneously affect two adjacent joints. For example, in severe spinal stenosis there may be considerable hamstring spasm and contracture. The patient walks with flexed hips and knees. In evaluating such patients, it is important to determine the primary problem yet recognize that multiple faetors may be involved with a telescoping effect.

Vascular problems not infrequently influence mobility in the elderly patient. Claudication restricts ambulation because of spasm in the calf muscles in contrast to "neurogenic claudication" where the patient stops because of low back and buttock pain. Ischemic neuropathy of diabetic origin causes sensory and at times motor deficits that produce an unstable gait pattern.

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Edema secondary to deep thrombophlebitis or congestive heart failure makes it difficult to provide the patient with proper shoes. This limits mobility, increases sitting, and leads to hip and knee contractures.

Gait analysis should follow. Weight bearing may reveal important findings which are not apparent during examination in the recumbent position. Abnormal and asymmetric postural attitudes during standing and walking are noted and compared with the examination in bed. Obviously, the patient must be disrobed to note any unusual finding. Observation of the patient while removing his trousers can reveal a latent hip problem. Localization of hip pain along the lateral aspect of the thigh while negotiating a step stool suggests a trochanteric bursitis. Standing in back of the patient who has impaired upper extremity mobility, one can observe asymmetrical scapular and shoulder girdle motion, differentiating between cervical, scapular, and intrinsic limb problems. For instance, paralysis of the long thoracic nerve causes winging of the scapula and limits full elevation of the arm. The winging will not be apparent if the examiner stands in front of the patient.

Pain has a profound effect on mobility, and its evaluation requires complete cooperation between patient and examiner. The relationship of pain and its localization to mobility and weight bearing must be assessed. Not infrequently, pain in the thigh referred to the knee may be the first sign of a latent hip problem.

One cannot perform a physiatric evaluation without assessing the mental and psychologic status of the handicapped individual. Mobility depends to a great degree on the ability of the patient to compensate for the disability and to be motivated to modify and adapt to a change in activity. Medicolegal factors may complicate the situation but the inability to pinpoint a significant cause for the loss of mobility should not necessarily lead the examiner to assume that the patient has an emotional problem associated with litigation.

Secondary Impairment of Mobility

Secondary impairment of mobility occurs in the chronically ill or elderly patient as the result of protracted immobilization or systemic disease without primary involvement of the neuromusculoskeletal system. These patients may be functioning at a marginal level and undergo rapid "dehabilitation" following an intercurrent illness or surgical procedure. Physical endurance may be signficantly impaired secondary to cardiac insufficiency or chronic obstructive pulmonary disease (COPD). Malnutrition with secondary anemia further compounds the immobility. Endocrine disorders may cause primary muscle weakness. Postural hypotension, particularly when drug induced, can be a limiting factor. In other patients, iatrogenic causes, such as overmedication of a dehydrated patient, certainly contribute to immobility, particularly when associated with a toxic encephalopathy. Environmental factors may restrict mobility when the patient is homebound.

The need for a simple systematic method to evaluate such patients is self evident. The standard clinical record based upon organ systems is an anatomic rather than functional assessment. The "PULSES Profile" system was developed by the author[3] as a structured approach to the problem by consolidating the functional criteria under six categories:

(P) Physical Condition
(U) Upper Extremities
(L) Lower Extremities
(S) Speech, Vision, Hearing
(E) Excretory, Bowel, and Bladder
(S) Social and Psychiatric

Each category has ratings from 1(normal) to 4(severe impairment). The profile is a useful tool in assessing the functional capacity of a patient in any given situation.

In evaluating patients with secondary impairment of mobility, one must have a baseline to indicate the premorbid condition in order to project realistic goals for the reactivation process. The "short-term goal" is aimed at improving or compensating for the multiple deficits. For instance, the confused incontinent patient following a hip fracture or replacement arthroplasty will usually respond promptly to the rehabilitation effort once the dehydration and overmedication has been corrected. The "long-term goal" is more comprehensive and is aimed at returning the patient, a widow, to her apartment where she can function on an independent level.

The advent of DRGs mandates prompt comprehensive evaluation of such patients from a functional standpoint to avoid routine transfer to long-term care facilities in order to expedite their discharge from the hospital. Obviously, pertinent social background information is essential before projecting the long-term goal.

Physiatric modalities are prescribed to improve the impairments, if feasible, with emphasis on prevention of contractures and mobilization in a pattern consistent with the disability or disabilities. For instance, the use of the walker is more desirable than crutches in the patient with COPD and visual impairment. Reassimilation of the patient either into the community or other appropriate environment consistent with the residual handicap should be the long-term goal in the mobilization plan.

Finally, it is mandatory that all health personnel involved in the treatment of the individual participate in a cooperative effort of defining the short- and long-term goals in order to insure continuity of care. This includes follow up evaluation to prevent regression of mobility as reflected by changes in the "PULSES Profile" often without intercurrent illness of trauma.

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Cochlear Implants

NATIONAL INSTITUTES OF HEALTH

Introduction

SINCE the development of cochlear implants in the 1960s, more than 3,000 persons—children and adults—have been implanted with a variety of these devices. Controversy exists on several issues, including determination of appropriate candidates, selection of a single-channel or multichannel device, suitable preimplantation and postimplantation assessments, and rehabilitation procedures.

Some reports have claimed a spectacular return of hearing in deaf persons with cochlear implants. Unfortunately, to date, no person can be documented to have had normal hearing restored by this device. On the other hand, the cochlear implant does provide significant benefits for some in a variety of ways.

Currently, we do not have the degree of understanding of disease mechanisms and disorders of function for hearing disorders that is common to other human organs and functions. This is partly because the organ of hearing is encased in bone and cannot be visualized during life. In addition, there are only limited numbers of qualified laboratories and scientists to prepare and evaluate specimens obtained after death. These methods are the essentials by which great strides have been made for disorders of other organs and systems.

Further, in our efforts regarding disorders of communication, particularly those related to language, we must not discount possibilities of new medical, surgical, and technological methods.

The charge of this panel, however, is appropriately restricted to the development of a consensus regarding five questions related to cochlear implants. These are addressed separately for adults and children because of special considerations necessary for the developing child. (A section on special considerations for children follows the fourth question.)

- Who is a suitable candidate for a cochlear implant?
- What are the advantages and disadvantages of the different types of cochlear implants?
- How effective are cochlear implants?
- What are the risks and limitations of cochlear implantation?
- What are the special considerations for children?
- What are the important directions for future research?

To address these questions the National Institute of Neurological and Communicative Disorders and Stroke and the Office of Medical Applications of Research of the National Institutes of Health convened a Consensus Development Conference on Cochlear Implants on 2-4 May 1988. Cosponsors of the conference were the National Institute on Aging and the National Institute of Child Health and Human Development of the National Institutes of Health, the Food and Drug Administration, and the Veterans Administration. After a day and a half of presentations by experts and discussion by the audience, a consensus panel drawn from specialists and generalists from the medical profession and related scientific disciplines, clinical investigators, and public representatives considered the evidence and came to the following conclusions.

1. Who is a Suitable Candidate for a Cochlear Implant?

Of the 15 million persons in the United States with significant hearing impairment, less than 1% are potential candidates for a cochlear implant. The selection of a specific person for a cochlear implant is not straightforward. There are no strict standardized criteria for accepting or rejecting a candidate. Traditionally, the cochlear implant subject was a postlingually deafened adult who met certain audiological, medical, and psychological criteria, which differed partially from one implant team to the next. In general, it was considered crucial that the subject show no residual hearing (total hearing loss) and no significant benefit from a conventional hearing aid. These seemingly straightforward criteria did not always work well in practice, and there emerged different definitions of "residual hearing" and "significant benefit from a hearing aid." Needs and wishes of individual subjects are also significant variables for implant candidacy. Finally, the issue of candidacy is further complicated because it has not been possible, preoperatively, to predict success with a cochlear implant in a specific person.

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Recognizing the uncertainty about the operational meaning of "residual hearing" and "successful hearing aid use," potential conflicts between subjects' wishes and objective criteria, and the absence of prognostic tools with regard to specific implants, the following discussion attempts to specify characteristics of adults who are potential users of cochlear implants. Because of the lack of data predicting the success of implants, the following stringent criteria are suggested:

- *Audiological Criteria.* Indications in favor of an implant are a profound sensorineural hearing loss bilaterally, aided thresholds greater than 60 dB HL, 0% correct on open-set speech recognition, and a lack of substantial increase in lipreading with an appropriately fitted hearing aid.
- *Electrophysiological Criteria.* Measurement of electrical auditory brainstem responses as well as of middle and long-latency evoked potentials should be a basic component in candidate selection. The absence of neural responses to electrical stimulation may or may not prove to be a contraindication.
- *Medical Surgical Criteria.* The usual candidate is a healthy, postlingually deafened adult. The medical history, physical examination, and laboratory tests are used to include or exclude candidates and to assist the implant team in planning a total program, including auditory training.

There are a number of possible complicating factors, including anatomical features, that affect implantation of the device: previous stapedectomy, temporal bone fractures, ossification of the cochlea, and congenital anomalies such as absence of the cochlea or auditory nerve. The question of candidacy should be reevaluated after preexisting ear problems, such as eustachian tube dysfunction, chronic ear disease, and cholesteatoma, have been treated.

- *Psychophysical Criteria.* Although a number of psychophysical data are available on implant subjects (temporal integration, gap detection, forward masking, pitch, loudness), none are considered critical in the candidacy issue. Rather, psychophysical data are critical to issues of efficacy and implant design. To date, preoperative psychophysical performance has not been a good predictor of speech recognition performance.
- *Psychological and Linguistic Criteria.* With respect to candidacy, most psychological testing is done for exclusionary reasons, usually mental retardation and psychiatric disorders.

The Issue of New Criteria for Cochlear Implant Candidacy

The field of cochlear implantation is changing rapidly, particularly technology, assessment procedures, and the significant firsthand experience by several groups of dedicated clinical investigators. One major result, which seems particularly noticeable as multichannel implants become more common, is exceptional performance by a small percentage of implantees on open-set tests of speech recognition. These results are truly encouraging and raise theoretical and practical questions. One theoretical question is "What is the upper limit on performance by cochlear implantees on open-set tests of speech recognition?" A practical question concerns the possibility for revising the criteria for candidacy.

Consider the following example. A subject obtains open-set performance of 10% with a conventional hearing aid, and the expected (mean or median) performance for similar subjects with a particular implant is 38%. Is the subject a suitable implant candidate? This question has several important ramifications. Revision of current criteria should be considered only after a rigorously controlled trial with a small, select group of persons has been completed. Such rigor is required because of the unpredictability of success with an implant and the possibility of decreased performance in persons who have measurable preoperative open-set speech recognition.

2. What are the Advantages and Disadvantages of the Different Types of Cochlear Implants?

Cochlear implants can be categorized in at least three important ways. Electrodes may be inserted either within the cochlea (*intracochlear*) or placed outside the cochlea (*extracochlear*); the signals may be transmitted through either one channel (*single channel*) or several independent channels (*multichannel*); and only certain features of the speech signal may be transmitted (*feature-extraction*), or the input signal may be transmitted to the electrodes without extracting specific speech cues (*nonfeature-specific*). These methods of categorization are the most important.

Cochlear implants also may be categorized according to the types of electrodes used (eg, monopolar, bipolar), method of stimulation (eg, pulsatile, continuous), or signal transmission through the skin by wires (using a percutaneous plug), or by electromagnetic means.

In an extracochlear implant, the electrodes may be attached to the round window niche or, in some cases, to the promontory. Single-channel stimulation is more common in this form of implant. In an intracochlear implant, an electrode or electrode array is inserted into the cochlea. For multichannel operation, the electrode array is usually inserted quite deeply into the cochlea (toward the apex), whereas for single-channel operation, a short single-channel electrode that does not extend beyond the first bend in the cochlea can be used. Multiple electrode arrays have been developed with as many as 22 electrodes that can be stimulated independently. Speech-feature processing typically involves extraction of the voice-fundamental frequency, formant frequencies, and determination of whether the speech sound is voiced or voiceless. In nonfeature-specific processing, the signals are usually transmitted directly to the electrodes without radical transformation. In a multichannel system of this type, known as a filter-bank system, signals in different frequency bands are transmitted separately to different electrodes.

Extracochlear stimulation, in contrast to intracochlear stimulation, has the advantage that the procedure does not invade the cochlea and is reversible. The disadvantages of extracochlear stimulation are narrower dynamic range, higher current density, and, concomitantly, a greater potential for stimulating other neural tissue, possibly resulting in facial nerve stimulation or vertigo. An additional concern is maintaining long-term contact between the external electrode and the round window or promontory.

The major advantages of intracochlear stimulation are relative ease of placement (particularly for short electrodes), closer proximity to neural structures, potential for lower current density, wider dynamic range, and more convenient tonotopic stimulation. The potential disadvantages of intracochlear stimulation include the usual hazards of surgery, insertion trauma, the possibility of mechanical damage to the cochlea, osteoneogenesis, possible release of ototoxic corrosion products, and the difficulty of replacing the device, should the need arise.

Several of the above disadvantages are reduced by the use of a short, single-channel electrode. There is, however, no general agreement as to the relative advantages of using short electrodes.

Multichannel stimulation has the advantage that information can be transmitted in a form that is easier for the user to understand. Because of interactions between the stimuli of electrodes activated simultaneously, the number of effective independent channels may be reduced. Feature-extraction systems are predicated on the assumption that certain aspects of the speech signal can be identified as being especially important and that these features can be transmitted effectively to the electrode array. Feature-extraction systems have the advantages of reducing interelectrode interference and, if the preceding assumption is correct, simplifying the understanding of signals received from the implant. A disadvantage of feature-extraction systems is that of possible errors in the estimation of speech parameters.

The current evidence suggests that multichannel intracochlear stimulation produces superior speech-recognition performance compared with single-channel stimulation. However, interpretation of the present data is complicated by differences in subject selection procedures among research groups and the lack of a common body of standardized tests. Speech-recognition performance is similar for single-channel intracochlear implants in comparison with single-channel extracochlear implants, and for multichannel feature-extraction implants in comparison with nonfeature-specific filter-bank-type implants.

3. How Effective are Cochlear Implants?

Few medical interventions yield outcomes as varied as those for cochlear implantation. Though no persons with implants can be said to have their hearing fully restored, some communicate face-to-face with comparative ease, and even a few (about 5%) can carry on normal conversation without lipreading. The most common outcome is some improvement in speech-reading ability. On the other hand, some persons with implants can barely distinguish between simple environmental sounds such as car traffic and the doorbell. Different studies report an appreciable number of persons with implants (2% to 15%) who may choose to discontinue the use of their prostheses. Despite the variability of these results, a large majority of persons welcome their implants—a reaction that is understandable and testifies to their strong desire to maintain or achieve some awareness of sound stimulation.

Variability in results arises partly because of differences among the implanted persons. Although all suffer profound hearing difficulties, the medical, linguistic, and psychological histories, as well as general cognitive skills, differ widely among them. In addition to these factors, the condition of the peripheral and central auditory system, both before and after surgery, is often impossible to assess with any accuracy. Finally, the efficacy of implantation is difficult to assess because of the variety of different procedures and tests used for this purpose. There are simply no standardized procedures presently available for such evaluation, although their presence would materially increase research progress in this field.

All of these reasons make it impossible to predict with any degree of accuracy the outcome for a particular person. However, despite these uncertainties, the available evidence suggests the following broad generalizations:

- Speech-reading is nearly always facilitated when using the implant, either of the single-channel or multichannel variety.
- Persons who have previously acquired language skills and have experienced hearing seem to benefit more from the implant than those without these characteristics.
- The bulk of the evidence from the United States suggests that speech recognition performance is superior in multichannel implants compared with single-channel implants. This generalization needs to be qualified somewhat. (See Question 2 on Advantages and Disadvantages of Different Types of Cochlear Implants.)
- The process of cochlear implantation represents a major change in the person's life. A strong interdisciplinary rehabilitation team provides a prudent support system to aid in this difficult transition. Consulting and counseling the person with an implant and his or her family, coupled with a training program of aural rehabilitation, facilitates the maximal use of the implant.
- There is convincing evidence of improved speech production in some who have received implants.

4. What are the Risks and Limitations of Cochlear Implantation?

Risks

Medical complications include all of the risks associated with surgery conducted under general anesthesia.

These are small but finite for persons in good general health but increase with age and other confounding conditions.

The surgery for placement of the implant may traumatize the cochlear endosteum and initiate new bone growth, which has the potential for damaging surviving neural elements and for complicating any replacements of the device. There is no present evidence to suggest that there is an increase in the spread of infection from the middle ear to the inner ear caused by implanting the device. There is, however, a risk of postsurgical infection at the site of the skin flap behind the ear and of a failure of the flap to heal normally, which could necessitate removal of the device. The operation also may damage the facial nerve or the vestibular system. Most cases of postimplant facial nerve paralysis and vestibular symptoms appear to have been transient. However, data on vestibular effects of implants have only been obtained from individuals with intact visual and proprioceptive systems. More data are necessary to evaluate risks of total incapacitation that could potentially result from complications of implantation in a unilaterally functioning labyrinth in a person with other sensory deficits. Passage of current through the implant at levels necessary for auditory stimulation may cause stimulation of the facial nerve. Data suggest that current in the implant is unlikely to produce vestibular symptoms. Placement of the implant may cause a reduction in tinnitus in some individuals but also may cause an increase in a smaller percentage of persons with implants.

Use of the implant may interfere with the use of residual hearing cues from the other ear or other modalities. The need for replacement surgery after equipment failure or for upgrading to another device exposes the person with an implant to the same risks and has the potential to cause the same damage as the initial operation.

Although there are encouraging data suggesting that corrosion of platinum electrodes used for three years was minimal, the effects of current passage and solubilization of metal from the electrode tip in the fluid medium of the scala tympani of the cochlea have the potential for deleterious effects on surviving neural elements. More data are necessary to evaluate these risks. Similarly, more data are needed to evaluate the potentially deleterious effects of low currents used over long time periods or of local heating effects due to high current densities as could be generated by alternative implant designs.

Finally, there is a possibility of psychological problems developing for the person with an implant and/or his or her family because of unrealistic expectations about improvements related to implant use.

Limitations

The effective use of cochlear implants is limited by a number of considerations. Some disease processes associated with hearing loss cause changes in the temporal bone that may prevent or compromise the appropriate insertion of the device. Chief among these are congenital malformations, whose anatomy increases the difficulty of inserting the electrode array in proximity to the neural elements to be stimulated, and osteoneogenesis secondary to meningitis, suppurative otitis media, and obliterative otosclerosis, which may obscure the round window niche and make it difficult to insert the electrode. Previous otologic trauma or surgery may result in fibrosis and osteoneogenesis, which produce the same difficulties. Another concern with hearing loss caused by meningitis is the small number of patients who spontaneously recover hearing. Because implantation may destroy cochlear structures necessary for normal hearing, there is a need to balance waiting a suitable interval to ensure that spontaneous recovery does not occur and placing an implant before osteoneogenesis has obliterated the cochlea.

Some candidates for implantation with congenital malformations may not be suitable because of increased difficulty of accurate electrode placement and increased likelihood of damage to the neural elements, the facial nerve, and endostem. Some congenitally deaf adults also may be inappropriate candidates for implants because of psychological commitments to the deaf world and nonauditory communication modes.

Placement of an implant also limits the ability of the implantee in several activities. All persons with implants need to avoid activities that could physically damage or displace the implant (eg, boxing or contact sports). Several medical tests and treatments are incompatible with preservation of implant function, including the use of magnetic resonance imaging (MRI), electrocautery near the implant, and diathermy and radiation therapy of the implant area.

It is not yet clear what minimum neural elements must be present for effective transmission of the electrical signal, although absence of all spiral ganglion cells and all auditory nerve fibers precludes success.

Special Considerations for Children

At the present time, cochlear implants for children are classified by the FDA as investigational devices. A minimal age limit of two years may be appropriate for cochlear implant candidacy for anatomic and neurodevelopmental reasons. In principle, the same criteria that apply to adults apply to children, whenever possible. It is recommended that hearing loss in children be corroborated with both behavioral and electrophysiological techniques. Indications in favor of an implant are profound sensorineural hearing loss bilaterally and aided thresholds greater than 60 dB HL, with confirmation of test/retest reliability.

A minimum of a six-month trial with appropriate amplification and rehabilitation is recommended, with the addition of a trial for a tactile aid. The latter is recommended so that children may learn stimulus/response associations that will be useful in the later evaluation of a cochlear implant. It is suggested that the criterion for lack of success with a hearing aid in younger children be the failure to improve on a closed-set task of simple pattern perception. This observation should be corroborated with subjective reports from parents and others for younger children. Adult criteria may be applied to older children. As with the adult subjects, the *a priori* prediction of success with a cochlear implant for a particular child does not appear possible at this time.

The loss of even minimal residual hearing has far more serious consequences for a child in the language and speech acquisition process than it has for an adult. For this reason, greater caution is recommended in the implantation of children with measurable thresholds at 4000 and 8000 Hz. Any change in guidelines for the implantation of children should follow additional trials for adults.

Children have received both intracochlear and extracochlear and single-channel and multichannel devices. Presently, it is not possible to determine which type of device—single-channel or multichannel—is superior based on the available evidence. Even fewer data exist for specific speech perception tasks with multichannel extracochlear devices. It is advisable that children receive an implant in only one ear.

Children with implants still must be regarded as hearing impaired, even with improved detection thresholds in the range of conversational speech. These children will continue to require educational, audiological, and speech and language support services for long periods of time.

Efficacy measures, comparing preimplant and postimplant performance, are complicated by the continuing development of the children, particularly in speech and language skills. There are no studies that adequately separate the effect of the implant from improvement due to maturation and training. The interaction of cochlear implants with training approaches, such as Total Communication and Cued Speech, should be studied.

The long-term changes due to prosthesis-tissue interactions are currently unknown. Further, it is not known how the implant would affect the developing auditory pathways. In considering cochlear implantation in children, the potential and possibly long-term effects of the implant, either beneficial or deleterious, are unknown.

5. What are the Important Directions for Future Research?

There are numerous research issues in connection with candidate selection. One is the criteria for candidacy for prelingually deafened adults and the possible need for novel preimplant and postimplant training programs. A second issue is special populations, including visually-impaired, learning-disabled, and retarded persons. The third involves the ear to be implanted, either the ear with "better hearing" or the ear with "poorer hearing." A fourth issue involves the use of a hearing aid in one ear and an implant in the other. A related issue is the efficacy of vibrotactile devices; such devices may have significant utility as a supplement to an implant, as a preimplant training device, or possibly as an alternative to a cochlear implant in some persons. Finally, data on high-frequency (>4kHz) are needed on implant candidates because part of the variance in the performance of implantees may reflect differences in preimplant capability at high frequencies.

Improved methods for predicting success with a cochlear implant need to be developed, possibly with tests using data from new imaging techniques such as positron emission tomography (PET) and electromagnetic recordings of auditory cortex activity (SQUID).

Standardized methods should be developed for the evaluation of implant effectiveness. This would then permit comparative study of single-channel and multichannel implants and investigation of alternative methods of signal coding. Improved networking among research groups is recommended and would clearly help in developing a common body of standardized tests and standardized selection criteria.

There should be continued study of presently implanted and yet-to-be-implanted adults to assess long-term effectiveness of cochlear implants.

The inability to predict who will be able to use implants or which signal components are critical for language comprehension reflects our lack of information about basic auditory mechanisms. To address this, we need information about many aspects of audition, including the perception of speech and other auditory signals. Appropriate measures of the integrity of the central auditory pathways need to be developed.

More work is needed on the effects of long-term electrical stimulation at varying levels of intensity, and the effects of new implant procedures and reimplantation in animals.

Further information is needed to identify the mechanisms leading to surgically obtained or spontaneous return of hearing following losses due to meningitis and other pathologic processes.

To further our understanding of basic mechanisms, there is a critical need for correlated histopathological evaluation of the temporal bones and brains of implanted persons and others with documented hearing losses from a variety of causes.

It is important to develop methods to assess the efficacy of the cochlear implant in improving the wearer's quality of life and daily functioning.

There is a clear need for standardized tests for young children, both for the selection of cochlear implant candidates and for the measurement of implant efficacy. These tests need to be based on tasks appropriate for younger, prelinguistic children. More research is required on effective aural rehabilitation procedures. In addition, research is necessary to determine effective ways to educate professionals in the new technology of cochlear implants and its effects on implanted children. Research on the plasticity of the nervous system should be encouraged in both animal and human studies.

The preliminary findings of some benefit and the confounding effects of maturation and training indicate the need for well-controlled, prospective studies in children.

Ideally, these studies should be small, randomized trials with precisely defined endpoints and should include appropriate audiological, behavioral, and biostatistical input into the design, analysis, and interpretation. These studies should not only control for maturation and training, but should compare the effect of cochlear implants with alternative methods of treatment.

Conclusion

The cochlear implant is an important step in our long-range goal of understanding, preventing, and treating hearing impairment and resulting language disorders.

There are candidates for whom a cochlear prosthesis implant is appropriate. The specific type of implant chosen for a given person depends upon many variables. It appears that multichannel implants may have some superior features in adults when compared with the single-channel type.

In some persons there is a substantial improvement in speech recognition after implantation, although, more typically, there is improvement in speech-reading.

The risks are few but definite. The limitations are many. Foremost of these is that implantation does not restore normal hearing.

There are very special needs concerning the evaluation and treatment of children.

Finally, future research goals should include not only improvement in cochlear implants and methods of testing, but, more importantly, a search for the understanding of mechanisms of disorders and diseases of the ear.

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Encainide

ROBERT D. COLUCCI, PHARM.D.

Introduction

ENCAINIDE (Enkaid®—Bristol Laboratories) is a class IC antiarrhythmic agent which has recently become available in the United States. Its current FDA indication is for the treatment of ventricular arrhythmias although it also has been shown to be effective in the treatment of various supraventricular arrhythmias.

Pharmacology and Pharmacokinetics

Encainide is a Class IC antiarrhythmic agent according to Vaughn-Williams classification and has electrophysiological properties similar to flecainide. In isolated canine Purkinje fibers, encainide exerts a direct membrane depressant action resulting in a reduction in both the amplitude of the action potential and maximum upstroke velocity (Vmax) of Phase 0 of the action potential with minimal change in the refractory period, therefore resulting in a decreased action potential duration.[1] The acute electrophysiological effect of encainide includes prolongation of the H-V conduction time and QRS interval duration.[2] Following chronic dosing, and the accumulation of the active metabolites, additional electrophysiological effects are observed including prolongation of the A-V refractory period, slowing of the A-V nodal conduction, and prolongation of the QT interval.[3]

Encainide is well tolerated hemodynamically. It produces no deleterious effects on pulmonary artery pressure or blood pressure. Ejection fraction does not change either at rest or during exercise in patients with poor left ventricular ejection fractions.[4-6] However, in less than 1% of patients treated with encainide the development or worsening of congestive heart failure has occurred.[6] Therefore, the manufacturer recommends that encainide be used with caution in patients with impaired cardiac function.[7]

Encainide follows two distinct metabolic pathways depending on the individual patient's genetic phenotype. Two patient populations have been identified, extensive metabolizers and poor metabolizers, each possessing different pharmacokinetic profiles. Approximately 93% of patients are extensive metabolizers. The two major metabolites that are formed following this pathway are O-demethyl-encainide (ODE) and 3-methoxy-O-demehyl-encainide (MODE) which have greater potency and contribute to the therapeutic as well as to the adverse effects of encainide.[8] Peak plasma concentrations following oral administration occur at 1.5 hours for encainide, 1.4 hours for ODE, and 5.7 hours for MODE. The systemic bioavailability is variable ranging from 14-38% due to the significant first pass effects.[8,9] The volume of distribution and percent of protein binding at steady state is 27 L and 70.5% respectively.[10] The elimination half-life of encainide and ODE range from 30 minutes to four hours, and from five to 37 hours respectively.[8,9] Both ODE and MODE accumulate significantly following encainide metabolism and are renally eliminated accounting for 40% of the urinary excretion products of encainide.[11] Encainide clearance is decreased in extensive metabolizers with renal dysfunction (creatinine clearance, 10-38ml/min) and both ODE and MODE concentrations may increase 80% and 167% respectively following long-term administration.[12] Therefore, dosage adjustment may be required in this population.

The bioavailability is increased and the systemic clearance is decreased in patients with liver dysfunction. Although a dosage adjustment is not required, a longer period of time is needed to achieve steady state concentration ($\geq$5 days) between encainide and its metabolites.[13,14]

Seven percent of patients receiving encainide are poor metabolizers and form minimal amounts of ODE and MODE. In this patient population encainide is primarily metabolized to n-desmethyl encainide which has equal antiarrhythmic potency as encainide and is observed in both plasma and urine.[10,15] The elmination half-life for encainide is much longer ranging from 8-22 hours.[10] In contrast to extensive metabolizers, there is an increase in the bioavailability by approximately 85% and protein binding by 78%.[10] Presently there are no studies reporting

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evaluation of encainide pharmacokinetics in poor metabolizers with renal disease. However, a dosage reduction may be required.

Because of the wide variation in the plasma concentration of both encainide and its metabolites, monitoring of plasma concentration offers little advantage at the present time.

Clinical Studies

Encainide has been evaluated in the treatment of chronic ventricular premature contractions (VPCs), sustained ventricular tachycardia, and in a variety of supraventricular tachycardias. In a dose range study, 122 patients received encainide and underwent ambulatory monitoring to determine VPC suppression. Fifty-three percent and 64.3% of patients receiving 75mg and 150mg of encainide per day achieved at least a 75% total VPC suppression per hour by day seven of therapy.[16] In a long-term efficacy and safety study, 48 patients with chronic VPCs were given titrated dosages and evaluated at 75mg, 150mg, and 225mg per day of encainide. At the highest dose, 83% of patients achieved >75% suppression of hourly total VPCs from baseline. Following a six-month followup period there was a 74% response rate.[17] In a comparative crossover evaluation between encainide and quinidine, for the treatment of PVCs in 20 men, encainide decreased the number of VPCs during both ambulatory monitoring and treadmill exercise greater than quinidine ($p < 0.01$ and $p < 0.025$ respectively). Additionally 44% of patients had 80% suppression of VPC and 88% had complete suppression of complex forms.[18] Tordjman et al evaluated 140 patients with recurrent symptomatic ventricular tachycardia by noninvasive testing (102 patients) or electrophysiology testing (38 patients).[19] Encainide was effective in 43% and 26% of patients who underwent noninvasive and electrophysiologic testing respectively. The incidence of side effects and proarrhythmic events occurred in 38% and 21% respectively. In 48 patients who were followed for a long period (mean 25 months), six patients had sudden cardiac death, three patients had recurrent arrhythmias, and five patients had developed adverse effects and required discontinuation of therapy. In another study, 80 patients with sustained ventricular tachycardia or ventricular fibrillation were evaluated on encainide.[20] In 34 of 63 patients who underwent noninvasive evaluation, encainide was effective. Of the remaining who underwent electrophysiologic evaluation, seven patients responded to encainide. Adverse effects or aggravation of the arrhythmia occurred in 30% and 23% of the patients respectively.

The effectiveness of encainide in the treatment of a variety of supraventricular arrhythmia is limited and has continued to be evaluated. Twenty-four of 33 patients having supraventricular tachycardia associated with the Wolff-Parkinson-White (WPW) syndrome achieved a good response to encainide.[21] In the treatment of atrial fibrillation in conjunction with WPW syndrome, 30 patients were evaluated; encainide was able to block the anterograde conduction pathway in approximately 50% of patients and slowed the ventricular response in the rest.[22] In three separate studies, a total of 20 patients with incessant supraventricular tachycardia were treated with encainide. Eighty-five percent of the patients had complete suppression during a period extending from 5-20 months, and at doses ranging from 100-325mg/day.[23-25].

Adverse Effects

Both extracardiac and cardiovascular adverse effects are observed with encainide. The most common extracardiac effect is dizziness (26%) and visual disturbances (19%).[6] Each of these adverse effects is usually dose related and often can be decreased by a dose adjustment, either lengthening of the dosing interval, or by the concurrent administration of food. Other common extracardiac adverse effects include nausea (11%), headaches (15%), taste disturbances (4%), and tremors (3%). The extracardiac effects are responsible for discontinuing of therapy in approximately 5.4% of patients.[6]

The emergence of a proarrhythmic event is the most common cardiovascular adverse effect with encainide. The occurrence of a proarrhythmic event may vary from 2.8%-12.1%, depending on the type of ventricular arrhythmia.[6] Patients having concurrent risk factors (ie, cardiovascular disease, congestive heart failure, or myocardial infarctions) will have a greater increase risk for a proarrhythmic event. Another cardiovascular effect is the development, or worsening, of congestive heart failure which occurs in 0.1% and 0.8% respectively.[6]

Dosing

The initial dose of encainide in patients with normal renal function should be initiated at 25mg q8h. The dosage may be subsequently increased to 35mg q8h, and then 50mg q8h, with three days or more between increments. Because of the increased risk of proarrhythmic events at higher doses, it is recommended that the lowest dose that suppresses the arrhythmia should be used. The value of monitoring the plasma concentration of encainide, or either of its metabolites, is limited because of the wide variation in levels observed.

Cost

The cost to the patient for encainide therapy ranges from $2.73 to $4.11 per day.

Conclusion

Encainide is the second class 1C agent to be approved in the United States. Its clinical efficacy in the treatment of asymptomatic ventricular and supraventricular arrhythmias has been demonstrated. However, in the treatment of sustained symptomatic ventricular arrhythmias, encainide lacks a high degree of efficacy and should be used with caution because of the occurrence of proarrhythmic events.

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Price Controls for Medical Services and the Medical Needs of the Nation's Elderly

(First of Two Parts)

WILLIAM J. BAUMOL

> "In Pennsylvania, where the main force of Washington's army was quartered in 1777, . . . [t]he legislature . . . decided to try a period of price control limited to those commodities needed for use by the army. The theory was that this policy would reduce the expense of supplying the army . . . . The prices of uncontrolled goods, mostly imported, rose to record heights. Most farmers kept back their produce, refusing to sell at what they regarded as an unfair price. Some who had large families to take care of even secretly sold their food to the British who paid in gold.
>
> "After the disastrous winter at Valley Forge when Washington's army nearly starved to death . . . . [t]he Continental Congress on June 4, 1778, adopted the following resolution:
>
> "'Whereas . . . it hath been found by experience that limitations upon the prices of commodities are not only ineffectual for the purposes proposed, but likewise productive of very evil consequences to the great detriment of the public service . . .resolved, that it be recommeded to the several states to repeal or suspend all laws or resolutions within the said states respectively limiting, regulating or restraining the Price of any Article, Manufacture or Commodity.'"
>
> Robert L. Schuettinger and Eamonn F. Butler, *Forty Centuries of Wage and Price Controls,* Washington, D.C.: Heritage Foundation, 1979, p. 41.

MEDICAL care, like higher education and many other vital services, has become steadily more expensive in recent years. The rising price of medical care constitutes a serious social problem, particularly in its effects upon the less affluent. This is a problem that our Nation cannot in good conscience avoid. A commitment by senior policy makers to find a solution that is rational and effective is urgently required.

However, as has occurred in a number of other analogous cases, in grappling with this serious problem, it has proved all too tempting to resort to legislation instead of logic—in effect, to undertake to solve such problems by declaring them illegal. Such an approach is no more rational than a law dealing with the problem of AIDS by prohibiting its occurrence. Indeed, price control measures are *worse* than an attempt to cure disease by legislative or regulatory fiat because the latter would simply have no effect at all, while price controls have side effects which are serious and which often exacerbate the problems they are intended to alleviate.

The basic purpose of this report is to show that the imposition of ceilings upon the fees for services charged by physicians under Medicare would be precisely this sort of misguided measure. Such a remedy would accomplish nothing to eliminate the basic causes of rising medical care prices, nor would it serve very long to alleviate the painful consequences. Instead, such price ceilings would materially reduce the quality, and ultimately the quantity, of medical services available to Medicare patients.

My conclusion is that although Congress and those in the Executive Branch involved in the administration of the Medicare program are justified in their concern about the problem of rapidly rising medical costs, they should avoid the seductive lure of the price control solution—a solution which would inflict a very heavy cost in loss of welfare upon the very persons whose interests such a program would be designed to protect.

My aim in this report is not simply to criticize price controls as a possible solution to the problem of rising medical costs, but is primarily to contribute to an understanding of the underlying problem. My report is divided into two parts. First, I provide a brief summary of the main elements of my analysis and conclusions. This is followed by a fuller statement of the analysis and the data upon which it is based.

Summary of Analysis and Conclusions

1. Rising Medical Care Prices Constitute A Serious Social Problem.

When observers assert that the cost of medical care is "high," they frequently mean that the prices charged by doctors and paid by patients or others are *rising* rapidly—more rapidly than the prices of most of the products and many of the other services provided by the economy.[2] This contention is demonstrably correct. The statistics, going back as far as the availability of data permits, do confirm that the price of medical care has risen at a rate

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[2] The term "cost" can be used in three different senses. It can refer to the cost (to the supplier of health care) of inputs used in providing

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persistently and substantially above that of the general price level—the economy's overall rate of inflation.

Such a pattern of rising prices is bound to be disruptive and painful. In particular, consumers with incomes that are low and comparatively fixed find it increasingly difficult to afford a product or service with persistently rising *real* prices (*i.e.*, prices rising faster than the rate of inflation). Because it is widely believed that the elderly are more likely to have incomes that are low and inflexible, this group is one that is generally thought most urgently to require protection. In fact, in recent years both the absolute and relative levels of the real incomes of older persons have markedly improved. But my central point is that serious social problems are created by the persistent and substantial relative rate of increase of the prices of medical care services.

2. Increasing Market Power Is Not The Basic Cause Of Rising Medical Prices.

Some observers have ascribed the problem of rising medical care prices to the alleged avarice of doctors coupled with their exercise of market power (sometimes referred to as "monopoly power"). Others, although not expressly attributing the problem to medical market power, have implicitly done so by suggesting that a proper cure for the problem is governmental price controls, in the form of a ban on what has come to be called "balance billing"—the practice of billing patients for any unpaid balance of the total bill remaining after amounts allowable under Medicare have been paid. Such price control, it will be noted, does not simply consist of a limitation on the amount which Medicare will contribute to pay for particular services—a subject beyond the scope of this report. The control is the prohibition upon the billing of patients for any unpaid balances in their bills, over and above the price allowed by Medicare.

In denying that avarice on the part of doctors and the charging of prices embodying monopoly profits play any significant role here, I do not suggest that the virtue of doctors is inherently superior to that of the rest of humanity. On the contrary, a key point underlying my analysis is that doctors appear no more willing than other professionals to sacrifice their economic interests indefinitely, selflessly continuing to provide services for which they are systematically underpaid. Rather, my purpose is to call attention to the causes of rising medical prices which really are significant, because without understanding the causes of this phenomenon, policy makers cannot design effective solutions.

In explaining that neither acquisitiveness nor market power is the basic problem, I first provide evidence that real physician incomes have generally *not* been rising significantly, and that this has been true for a substantial period of time. If doctors were a particularly greedy group of professionals, then clearly they have generally not been very effective in achieving their goals. But more to the immediate point, the recent history of virtually constant real physician incomes cannot serve as the explanation of a persistent pattern of *rising* real medical prices.

I also provide evidence of the competitive pressures that characterize the market for physician services—the growth in the number of new health care providers, the increasing geographic dispersion of physicians, the absence of effective means for physicians to coordinate their fees and to prevent particular doctors from undercutting the prices charged by others, and the expanding role of HMOs (health maintenance organizations), as well as a number of other influences.

In assessing this evidence, I readily acknowledge that medical markets do not fit the model of the theoretically ideal state of perfect competition. Patients do not generally switch doctors casually in response to small price differences. Many people are unable to judge relative physician quality and are not well informed about differences in the prices doctors charge. Also, licensing, whatever its virtues, is an impediment to freedom of entry.

But whether these competitive imperfections are important or negligible, they are largely if not entirely beside the point, because if they were to constitute explanations of the persistence in the *increase* of medical prices, the strength of these imperfections would have to have been increasing. Yet the pertinent evidence indicates just the opposite. The evidence cited by the severest critics of the medical profession shows no growth in the degree of competitive imperfections of the market. On the contrary, the increasing numbers of HMOs, the expanding supply of doctors relative to the population, and other similar developments all serve to *enhance* competitiveness.

A pattern of *declining* market imperfections can hardly account for the bulk of the persistent *rise* in real medical care prices. Therefore, we must look elsewhere for an explanation of the rising prices of medical care.

3. The Increase In Medical Care Prices Has A Technological Basis.

If neither an absence of competitive forces nor abnormal acquisitiveness on the part of physicians has caused the increase in the price of medical care, what are

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medical services. Or it can refer to the cost to the consumers—the price per unit of output, holding the amount of service constant. Or the term "cost" can be used to refer to the total expenditure of all consumers for all medical services, where the quantity of services consumed varies over time.

In this report, I am dealing with the problem of increasing prices charged by doctors and paid by patients or others for particular medical services, holding the quantity consumed constant. These prices are the "costs" incurred by the patients or others who pay for, or bear the burden of paying for, particular medical services. I understand that the United States government, as the ultimate bearer of a large share of the total outlays, is concerned not only about the prices charged for particular services, but also about the quantity of services consumed. Because the principal focus of this report is on price controls, I center my analysis on the causes of unit cost and price increases, rather than on the increased quantities of services consumed.

the principal causes? In the answer to this central question, a substantial role must be assigned to what economists have called "the cost disease" of personal services. This phenomenon is described in detail in the body of this report, but it can be explained very briefly here.

There are a number of service activities—such as teaching, performances by violinists, and the work of physicians—which cannot be automated to any very substantial degree, or where a reduction in time spent by the provider of the service usually entails a reduction in the quality of the service. These personal services have, consequently, benefitted from comparatively little growth in labor productivity—that is, from reductions in human (labor) input per unit of output. The statistics suggest that since the beginning of the industrial revolution, the amount of labor devoted to an "average" manufactured good has fallen by some 95%; but for personal services, the amount of labor expended per unit of output has hardly declined (although the *quality* of at least some of the outputs may have risen substantially). Almost every year the productivity of labor in manufacturing rises significantly faster than in personal services. For example, in years when the rate of inflation in manufacturing was in the range of 6%, it has been normal to experience a rate of increase in the prices of education, tickets to the performing arts, and health care services *higher* than 6% by several percentage points. This is because rising costs in manufacturing are partly offset by growth in productivity, but in the personal services this is true only to a much smaller degree. That is, if wages in manufacturing rise by 8% in a year but labor productivity increases 2%, the net increase in cost is the 6% difference between the two. Prices of the personal services, such as medical care, benefit relatively little from such a productivity offset. This is the fundamental reason why, as will be shown statistically, year after year the prices of medical care services paid by patients and insurers have risen faster than the economy's rate of inflation, which is the rate of increase in the prices of the economy's outputs generally.

My fundamental point is that the phenomenon of rising medical prices is deeply rooted in the technology of the health care industry. Accordingly, the cause of the problem is neither physician greed nor an enhanced ability to charge prices that yield monopoly profits; and the problem of rising medical prices therefore cannot be solved by capping the prices supposedly produced by such monopolistic behavior.

4. Price Controls Entail Social Costs.

A price control "cure" for the rising prices of medical care services is not only specious, but is likely to prove seriously detrimental to those it is intended to protect. The damage which price controls will cause is not difficult to predict or describe. A significantly restrictive cap on the prices of Medicare services will almost certainly reduce, in the long run, the quality and quantity of such services.

In this respect, doctors are no different from the suppliers of other socially valuable goods and services. In the short run, if fees are held below a market level, greater amounts of medical services may be consumed—with the odd result that the immediate effect of the fee cap could well be an *increase* in the government's total Medicare cost burden. But in the long run, the main effect of price controls will fall on the supply of medical services. If physicians' fees are cut substantially, higher proportions of able students will turn to other areas of professional or business training such as law schools and MBA programs. Medical students themselves will specialize in fields least severely affected by the controls.

The problems created by price controls are exacerbated when such controls apply only to a portion of a field of activity, as is the case here. If fees for treatment of the elderly are artificially depressed, physicians will gradually shift their practices to patients to whom the controls do not apply, just as builders predictably turn to the construction of buildings not covered by rent controls. Neither a sense of charitable self-sacrifice nor the dictates of the Hippocratic oath can be counted on to compel doctors to supply their services indefinitely at income levels below those available elsewhere.

Here again, pertinent empirical evidence is available and will be described. For example, data on the emigration of doctors from other countries confirms that in choosing where they will live and practice, doctors are not essentially different from other professionals. These data and other evidence confirm that a cap on Medicare fees either will not reduce those fees substantially—or if it does, that it will lead to a shift of resources that will ultimately deprive affected patients of the quantity and quality of medical care they would otherwise have had available to them. Experience in other sectors of the economy confirms that, in the long run, price controls actually tend to increase the prices they were intended to hold down.

In this case, if the Medicare fee cap does deplete the supply of physicians, then public authorities may well find themselves eventually forced to relent and to weaken the ceilings. In the meantime, the supply of doctors will have been reduced, which in the short run will tend to raise prices. But also, in the long run, if potential entrants into the medical field have been led by the price control experience to be concerned about possible future reimposition of price controls, then a sort of additional insurance premium in the form of enhanced prospective fees will be required to induce the entry of as many persons into the field as a lower fee might otherwise have elicited.

In sum, the evidence strongly suggests that although the problem of rising medical care prices is very real and may well call for difficult remedial measures, price controls are an ineffective and dangerous remedy. If our policy makers chose to ignore experience and adopt such measures, it is the elderly and the poor who will be compelled to bear the resulting heavy burden.

I. The Problem—The Rising Prices Of Medical Care

In this report, I have been asked by the American Medical Association to analyze various proposals to change the rules under which physicians bill and are reimbursed for their services to Medicare patients. These proposals have a common purpose—they seek to reduce medical care prices by controlling what physicians may charge for their services. However, such measures would not eliminate—but would instead exacerbate—the problem of increasing prices in the medical care industry. Before turning to the relationship between the problem and the proposed cure, it is appropriate to review the nature of the proposals.

Before July 1, 1984, the Medicare program did not control the fees physicians charge their Medicare patients. Medicare reimbursement was limited to a "reasonable charge," which was generally the lower of the "customary" or "prevailing" charges.[3] The "prevailing charges" were limited further to the charges in effect during the year ending June 30, 1983, after increasing them in accord with the Medicare Economic Index to adjust for inflation. In most cases the charges of physicians exceeded the Medicare reimbursement levels, and physicians made up for the shortfall by charging their Medicare patients the difference between their normal fees and the amounts reimbursed by Medicare. Between July 1, 1984, and December 31, 1986, Medicare imposed a freeze upon physician fees. Physicians were prohibited from charging Medicare beneficiaries more than they had charged during the period April 1-June 30, 1984.

Beginning January 1, 1987, however, the Medicare program restricted the amount which physicians may charge Medicare beneficiaries to what is called the "Maximum Allowable Actual Charge" (the MAAC). The MAAC is defined as the greater of 101% of the previous year's MAAC figure, or the previous year's MAAC plus a fraction of the difference between 115% of current charges and the previous year's MAAC. The current MAAC system of price controls applies to services performed during 1987, 1988, 1989, and 1990, and is, in effect, an interim measure that applies while Congress considers proposals to adopt a fee schedule method—based on a relative value scale ("RVS")—for reimbursing physician services. Under an RVS system, the amount Medicare pays for physician services would be based on the relative amounts of time and skill entailed in various procedures, rather than on the basis of the market prices for such services.

Congress has charged the Physician Payment Review Commission ("PhysPRC") with the task of making recommendations to Congress and HHS on Medicare physician payment reform. PhysPRC has endorsed a fee schedule approach. In addition to considering how to structure a Medicare fee schedule, PhysPRC will decide whether to recommend a fee schedule system which either (1) limits the amount over the Medicare-provided level which physicians will be permitted to bill Medicare beneficiaries, or (2) precludes such supplementary billings altogether—*i.e.*, bans "balance billing."[4] So far, the Commission has made no decision on this issue.

What is the problem that has elicited these proposals? A few statistics will make it clear. From 1947 to 1986 the Consumer Price Index increased at an average annual rate of about 4.2% per year compounded. During the same period the annual rate of increase in the price of a visit to a general medical practitioner (the price charged by the doctor to the patient) was nearly 5.5% per annum (see the attachment following Figure 10 for the data sources and other explanatory materials). This difference may not seem very large, but, over the 39 years in question, it means that the price of a physician visit has increased by approximately 750% in absolute terms, or 150% in relation to the general price level (that is, in terms of dollars of constant purchasing power).

To Medicare patients the price of visits to doctors is not the only concern. Obviously, other considerations, such as the price of a hospital stay, also affect the welfare of the patient. But this only aggravates the problem. Over the same postwar period, the price per patient day at a hospital is reported to have risen at an average annual rate of 11.7% compounded, which over the 39-year interval cumulated to more than a *9,000%* increase. This amounts to a 1,750% rise in terms of dollars of constant purchasing power—that is, after full correction for the economy's overall inflation during this time interval.

Increases of this magnitude clearly constitute a serious threat to the quality of medical care that middle and lower income persons, whether older or younger, can afford. In an affluent society such as ours that is dedicated to promoting the general welfare—including the provision of medical care meeting some minimum standard of acceptability—the rising price of medical care clearly represents a problem of the utmost seriousness.[5]

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[3] "Customary charges" are defined as the 50th percentile of a physician's actual charges for a service during the period July 1 to June 30 preceding the reimbursement year. "Prevailing charges" are defined as the 75th percentile of the actual charges of all physicians during the same period.

[4] The National Council of Senior Citizens (NCSC) reportedly wants Congress to ban "balance billing" directly. *National Journal,* "Health Report," (November 21, 1987), p. 2961. Another way to achieve the same effect indirectly is to compel "mandatory assignment" of claims—*i.e.,* require doctors to accept Medicare-approved fees as payment in full. Massachusetts has enacted a law requiring all doctors licensed by the state to accept mandatory assignment. The Canadian provinces have also passed similar legislation. At least one Canadian economist, Robert Evans, has testified before the PhysPRC recommending that the United States adopt mandatory assignment. It is not clear whether this recommended requirement would be made applicable to all licensed doctors, or only doctors who accept Medicare patients; but because Medicare patients constitute such a large fraction of total medical care services, the difference in coverage would not be very significant.

[5] There are offsets, however. Growing knowledge and improved medical techniques indisputably mean that patients are getting more (*i.e.,* better care) for their money than they were forty years ago. More than that. To the extent that innovation has reduced the length of treatment some illnesses require, expenditure per illness must have risen correspondingly less quickly than cost per patient day.

Precisely because the problem is so serious, any attempt to deal with it rationally surely requires that we do our best to understand its causes.

II. One Possible Cause Of Rising Medical Care Prices—Lack Of Competitiveness Of Medical Care Services

It was probably inevitable that a price increase problem of the magnitude that has occurred during the last four decades in the field of medical care would be attributed by casual observers in large part to price-gouging on the part of doctors. Thus, some who have not examined the problem with care have explained it as a consequence of greed, or inefficiency, or some combination of the two. Somewhat more sophisticated variants of this approach have attributed at least part of the problem to market power on the part of physician. There is a considerable literature, by no means all of it unsophisticated, that imputes elements of market power and attempts at monopolization to the operations of the medical care sector of the economy.

As I have already suggested, neither the structure nor the operation of the medical care market fits the economists' theoretical ideal of perfect competition. Several features have been identified by informed commentators as sources of imperfection in the competitiveness of health care: (1) the imperfect knowledge of consumers of health care services; (2) the limitation on the number of students who can be accommodated by our medical schools; and (3) the requirement that a physician obtain a license in order to be permitted to practice. Each of these features can to some degree serve as an impediment to perfect competitiveness. Furthermore, the price of an additional unit of service is frequently not borne, or at least not borne completely, by those who consume it and who decide to purchase it.

It is apparent that most individual patients are imperfectly informed about the range of available treatments, the comparative qualifications of different physicians, and the variety of health care organizations whose services are available and the scope and quality of services they offer. Moreover, patients are frequently reluctant to explore new forms of health care organizations or to seek out new doctors, and are often unwilling to take advantage of opportunities to reduce their expenditures without material loss in quality of medical care. This is due in part to lack of information about the availability of such opportunities, and in part to patient distrust of their own state of knowledge. Indeed, some patients may, *faute de mieux*, be driven to judge quality by price, taking any less expensive service necessarily to be one that is inferior.

This lack of perfect knowledge by patients no doubt serves to disincline the suppliers of health care services to undertake to cut their prices. That is so because the return to such a price cut is likely to be far lower than it would be in a market in which customers are well informed and therefore switch to any supplier who is prepared to offer a service of high quality at prices lower than those being charged elsewhere.

There is, however, another side to the imperfect information problem. There are means by which a potential purchaser of medical care services can improve the information he or she possesses. Referrals by one trusted doctor to another, consultations and second opinions, and inquiry into the identity of the hospital or the medical school with which the doctor is connected are among the means many individuals have available to increase their pertinent knowledge. Moreover, the rapid rise in the number of HMOs and related organizations and the number of persons enrolled in them (a matter to which I will return presently) show that the unwillingness of patients to change their medical care arrangements in response to cost considerations can easily be exaggerated.

Competitiveness is also somewhat impeded by limitations on the number of places available for students in medical schools; and the licensing requirement for the practice of medicine has a similar effect. Though both of these features have some obvious benefits in assuring the public of the qualifications of the medical personnel who serve it currently and prospectively, it cannot be denied that to some degree they also constitute barriers to entry. Certainly, these two attributes of our medical care markets serve to distinguish the industry from one which meets the requirements of the theoretical state of perfect competition.

In addition, it is apparent that the price of an individual's decision to avail himself or herself of an additional unit of medical care service often leads to little or no corresponding increase in his or her total medical expenses. Thus, the person whose visits to a doctor or whose sojourn at a hospital is paid for by Blue Cross, Blue Shield, an HMO, Medicare, or Medicaid may have a higher propensity to acquire such a service, with less attention to its urgency or less vigilance against excessive charges for such services, than an individual to whom such a decision carries with it an obligation to bear the entire increment in cost. By tending to encourage demand and by reducing resistance to price increases, such arrangements can obviously decrease the ability of competition to hold down prices.[6]

However, even when these features are taken into account, they do *not* mean that the medical care market is not markedly competitive. The number of physicians in the U.S. exceeds half a million. Even in most local medical care markets, the number of doctors is sufficiently large to prevent collaboration in the setting of medical fees. Moreover, in most larger communities, doctors are confronted by large and powerful organizations which purchase physician services in large quantities, and whose managements are well aware of the current state of the market and are in a position to bargain effectively over fees. Many of these organizations are, in effect, retailing organizations which purchase doctor services in bulk, and then resell those services to the final consumers. This retailing activity is itself carried out in local markets where the forces of competition are strong, and where HMOs and PPOs themselves compete with each other for members. Thus, there are strong pressures precluding these organizations from overpricing, and these pressures are transmitted on to the market for physician services.

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[6] The effect of such insurance arrangements on the demand of individuals for medical care (or on the vigilance devoted to excessive charges for services) may be exacerbated by the formulas embodied in these arrangements. For example, if the costs of a particular service (X) happen to grow relatively slowly, but the rules call for reimbursement to be based on the behavior of the average of the costs of a number of services, then outlays on X may be driven to rise faster than the actual cost of X.

I conclude that medical care markets are much more competitive than is often thought, and that many different kinds of evidence can be provided to support this conclusion. However, here I take a more direct approach to the problem, for two reasons. First, a study of the current competitiveness of different medical care markets or submarkets throughout the United States would be extraordinarily complex and time-consuming. Second, and more important, the *current* degree of competitiveness of medical care, whatever it may be, is irrelevant to the central issue before us, which is the rapid and persistent *rate of increase* in the prices of medical care.

If one were to assume, for the sake of argument, that markets for medical care services were highly uncompetitive, such a premise might explain why medical charges are "high" at some given time. However, it would *not* constitute an effective explanation for the rapidity and persistence of the rises in those charges over a period of many decades. In order to ascribe so marked a pattern of rising charges to the exercise of market power by doctors, one would also have to assume that the hypothesized medical monopolists started off as a model of moderation and then grew increasingly acquisitive with the passage of time.

Stated another way, if an asserted weakness of competition is to serve as a plausible explanation of rapidly *rising* medical prices, it must mean that the market's degree of competitiveness, whatever its state may have been years ago, has been *declining* steadily. Otherwise, why would prices be disproportionately higher today than they were last year, or forty years ago?

In fact, the available data strongly suggest that, far from becoming weaker, the state of competitiveness of our medical care markets has been *increasing,* persistently and markedly, for a period well over a decade. This trend is fundamentally inconsistent with the notion that the competitiveness of these markets is somehow responsible for the pattern of consistently rising real prices.

All the evidence points to the conclusion that whether or not the market for medical care services may today be characterized as effectively competitive, the competitiveness of that market has been increasing steadily in recent years. This is shown by the increasing number of suppliers of medical services—the number of physicians in relation to the total population. It is confirmed by the growth of the rate of entry into the field—the number of students completing medical school. It is further confirmed by the growth in number and variety of health delivery organizations, the retailers of medical services, and the number of persons who subscribe to them. And it is also supported by evidence showing that real physician incomes have been virtually constant for about a decade.

These are the attributes that are customarily taken into account in determining whether the competitiveness of a market is increasing. For this purpose, one considers whether the number of suppliers is rising, whether an increase in the number of entrants suggests an easing of entry conditions, whether the structure of the market is being modified by the increasing presence of institutions that are in a position to prevent uncompetitive behavior, and whether earnings in the field show any signs of increase as a possible result of noncompetitive behavior patterns. Usually, exemplary performance in any two of these four areas is taken to be effective evidence for the proposition that competition is growing stronger. It is quite rare that all four of these elements point unambiguously in the direction of increasing competitiveness. Yet, this is clearly true of the medical care field.

A. Growth In The Number Of Physicians Relative To The U.S. Population

The basic strategy of any group seeking to exercise market power, increase prices, and extract supracompetitive earnings is to restrict the number of suppliers. In medical care the primary suppliers are, of course, the physicians themselves. Thus, the obvious indicator of trends in competitiveness is the number of doctors. Here, extensive data are available from governmental publications and from the AMA physician master file. Data for the most recent period tell an unambiguous story.

Between 1970 and 1985, the total number of active physicians in the United States increased from 312,000 to 511,000. This constituted an increase of 64%, or an annual rate of increase of 3.3%.

But the absolute number of doctors is less important than the *relative* size of this number in comparison with changes in the size of the overall population. The degree of scarcity or abundance of doctors is not determined by their number alone, but by their number in relation to the size of the general population.

Here also the trends are straightforward. The ratio of physicians to population (per thousand) has also risen steadily, from 1.53 in 1970 to 2.14 in 1985. This is an impressive increase of 40% in 15 years, or an average rate of increase of 2.2% per year. That is hardly the trend one would expect to see in a segment of the economy in which the intensity of competition was decreasing. On the contrary, these facts clearly constitute evidence of an increase in competitiveness.[7]

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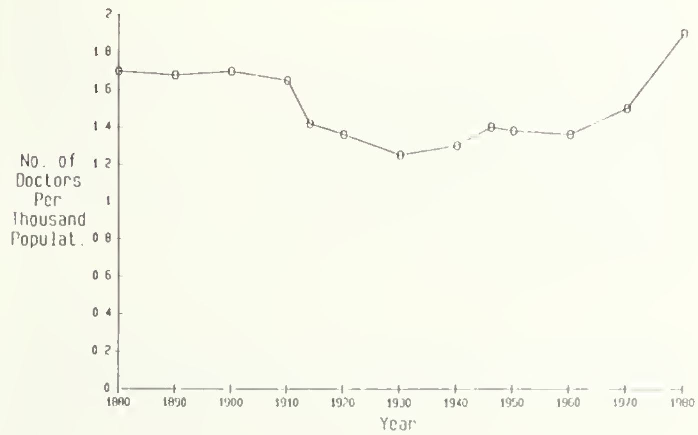
[7] It should be noted, however, that while developments on the supply side clearly play the important role suggested here, a rise in physician-population ratio may also be attributable to some degree to increasing demand for physician services ascribable, for example, to rising per capita incomes, improved quality of medical services, and aging of the population.

The facts did not always manifest this pattern. Until the early 1960's the ratio of the number of doctors to the size of the general population had generally been decreasing—a trend that had been under way since the latter part of the nineteenth century. This trend is shown in a graph (Figure 1) taken from a paper by Monica Noether of the Federal Trade Commission.[8] The Noether study shows a steady decline in the physician-population ratio which lasted at least from 1910 to 1930, and resumed in the first decade after World War II. This does not mean, of course, that the market was growing monopolistic during these periods, because the number of suppliers of a service may decline for many reasons other than as a manifestation of growing market power. During the Great Depression the trend may simply have reflected an inability on the part of a considerable proportion of the society to pay for physician services; and during the postwar period it may indicate that the supply of doctors was unable to keep up with the surge in the U.S. population.

Figure 1 Physician-Population Ratio, 1880-1981



However, the picture is very different after 1960. During this period the physician-population ratio has risen sharply to levels apparently never before achieved. This is confirmed by Figure 2, which incorporates data more recent than Dr. Noether's showing that the trend has continued, without sign of letup, to the present time. This trend alone, over almost 30 years, constitutes unmistakeable evidence of the growing competitiveness of the medical care markets.[9]

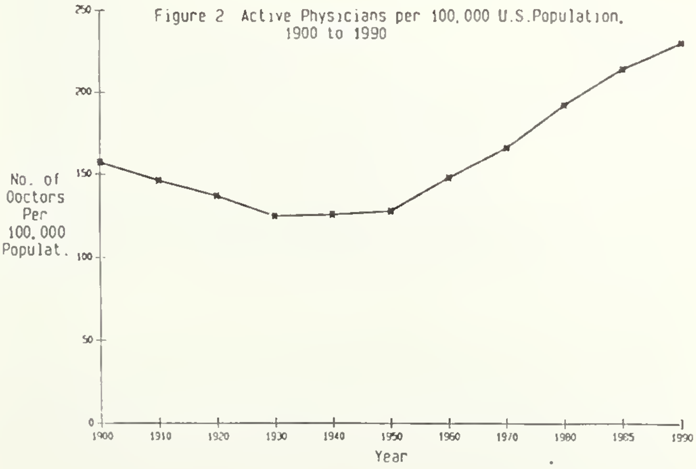


Figure 2 Active Physicians per 100,000 U.S. Population, 1900 to 1990

B. Medical School Attendance: Rising Entry Into The Profession

A second attribute to which analysts turn in assessing trends in the competitiveness of an industry is ease of entry. The threat of potential entry is widely recognized as a powerful force that by itself can suffice to prevent uncompetitive behavior in markets. Overpricing and excessive earnings, the prime goals of those who undertake uncompetitive actions, are in and of themselves irresistible magnets drawing potential entrants into the arena if barriers to entry are absent or negligible. The arrival of new entrants suffices to undercut any anticompetitive activities, and to impose on those who undertake them the reduced prices and earnings that are the consequence of monopolistic pricing practices. Increasing ease of entry, then, like an expansion in the number of suppliers, is a sure sign of increasing competitiveness.

Indeed, *either* an expanding number of suppliers *or* increasing ease of entry is *itself* a sufficient condition for increasing competitiveness. That is, if either of these conditions were satisfied but the other were not, it would still follow that the market must be moving in the direction of increased competitiveness.

Of course, entry could be free and yet very little movement into the pertinent market might be observed. This would, for example, be true of a depressed industry, whose absence of entry barriers would not induce outsiders to embark on ventures in an area in which financial losses are likely. However, the converse inference is generally valid: a record of substantial entry *does* mean that there cannot have been barriers sufficiently great to prevent it. This in turn suggests that an arena into which the influx of entrants has been growing substantially *cannot* be one characterized by increasingly powerful barriers to entry.

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[8] See Monica Noether, "The Growing Supply of Physicians: Has the Market Become More Competitive?" *Journal of Labor Economics*, vol. 4, no. 4, 1986, pp. 503-507. Besides simply reporting the pertinent facts, the author also conducts a sophisticated econometric test, constructing a model which determines the theoretical level of physician earnings and is then used to estimate the parameter values in a function describing actual physician earnings as a weighted average [with respective weights w and (l-w)] of the competitive and monopolistic earnings levels. The criterion of growth of competitiveness used, then, is the intertemporal behavior of w. If the estimated value of w turns out to exhibit a marked and consistent upward trend whose value passes a number of appropriate statistical tests, then the evidence satisfies the author's criterion of growing competitiveness.

[9] The alert reader may well inquire why, if the period of declining physician-population ratio is not conclusive evidence of a previous fall in competitiveness, since essentially fortuitous influences may well have accounted for the falling ratio, the same logic in reverse does not cast similar doubts about the growing competitiveness conclusion drawn for the period when the ratio was rising. Might not the rise in physician-population ratio be attributable to influences other than increasing competitiveness? However, there is no such symmetry, for at least two reasons. First, I am *not* asserting that growing competitivenss produced the increase in relative physician supply. Quite the reverse; I am asserting that the rise in relative supply, whatever its causes may have been, *must have served to increase the intensity of competition.* Second, had there been a successful attempt to reduce competitiveness in this market with its many suppliers, it must surely have involved something tantamount to a cartel whose hypothetical success would have required it to overcome those possible fortuitous influences that would otherwise have allowed physician supply to "get out of hand," as it obviously actually did. In other words, success in the dealings of a cartel consists in arranging matters as W.C. Fields once described his own proceedings in a game of cards—"When you play with me, all elements of chance have been removed!" It is the fact that the influences that led to the rising relative physician supply were *not* removed that shows conclusively that competitiveness in the industry could not have been declining.

Entry into medical practice in the United States comes partly from abroad. For example, a 1970 study reported that, "In 1969 over 2,300 graduates of foreign medical schools obtained a license to practice in the United States. This may be compared with only 7,671 graduates of U.S. and Canadian medical schools similarly joining the profession." (Harold Luft, "Determinants of the Flow of Physicians to the United States," Santa Monica: The Rand Corporation, Dec. 1970) Thus, in 1969 some 30% of the new physicians came from abroad.

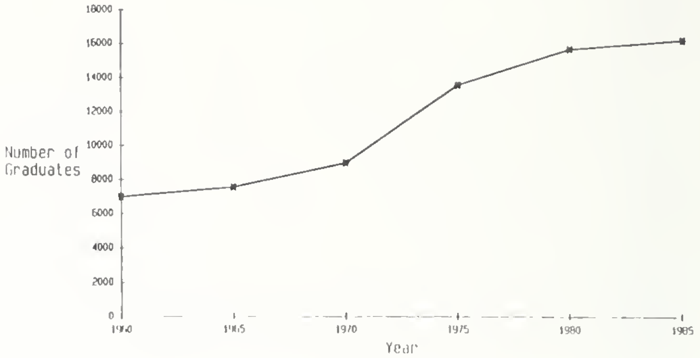
However, the bulk of the entry of the prime medical care suppliers, the physicians, occurs through United States medical schools. One can therefore most directly examine both ease of entry and actual entry performance by inspecting the data on the number of accepted applications and number of medical school graduates.

Here again the evidence is unambiguous. Data regularly reported in the *Journal of the American Medical Association* indicate that in 1970-71 the number of applicants accepted in U.S. medical schools was 11,500. By 1986-87 the number had risen to 17,000—an increase of nearly 50%, or an average annual rise of 2.5%. A similar pattern was manifested by the number of medical school graduates, which rose from some 9,000 in 1970-71, to more than 16,000 fifteen years later. This amounts to an increase of 80%, or 3.8% per year. During the past few years (since 1983-84) in the case of graduates and somewhat earlier in the case of admissions, this figure has been declining slightly. But that decline is negligible in comparison with the increase that preceded it. Moreover, in light of the decline in relative physician incomes that will be reported presently, it is surprising that the fall in attendance of medical schools did not begin even earlier.

Figure 3 reports the record on the number of graduates from U.S. medical schools since 1960. The graph confirms the modest relative size of the recent decline, and shows how dramatic the overall increase has been. This evidence is particularly pertinent in light of suggestions that limited space at U.S. medical schools constitutes a prime barrier to entry into the medical care market. Whether or not that may have been true at one time, one cannot escape the conclusion that if it ever were a barrier, its power to hold back entry has declined sharply.

Moreover, the fact that the number of admissions has recently fallen is itself confirmation of the weakening of any such impediment to entry. For in recent years the number of applications has fallen along with the number of acceptances—all of which suggests a rise in number of vacant places, *i.e.*, of unused capacity, in the medical schools. And the schools have responded predictably by raising the ratio of acceptances to number of applications from 45% in 1970-71 to 56% in 1986-87. This is, of course, the most direct type of evidence of increasing ease of entry and, therefore, of increasing competitiveness of the medical care arena.

Figure 3 Number of U.S. Medical School Graduates, 1960 to 1985

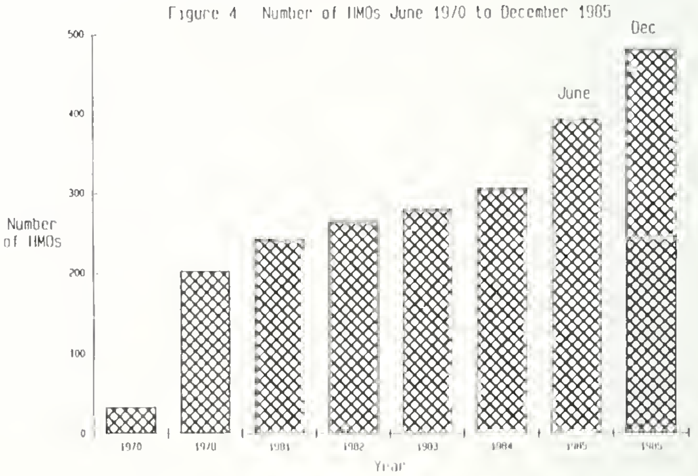


C. Competitiveness And Evolving Industry Structure

In some early discussions of the competitiveness of the the medical care industry, it was suggested that there were a variety of impediments to the establishment and proliferation of organizations such as HMOs, and that the opportunities for enhanced competitive influence from such organizations in the form of downward pressure on prices and delivery of more economical medical care services were thereby severely limited.[10]

The available evidence today undercuts any such suggestion. Whatever the impediments to the establishment and growth of such organizations may once have been, they have certainly succeeded in overcoming these obstacles. Figures 4 and 5 show the pattern of growth in

Figure 4 Number of HMOs June 1970 to December 1985



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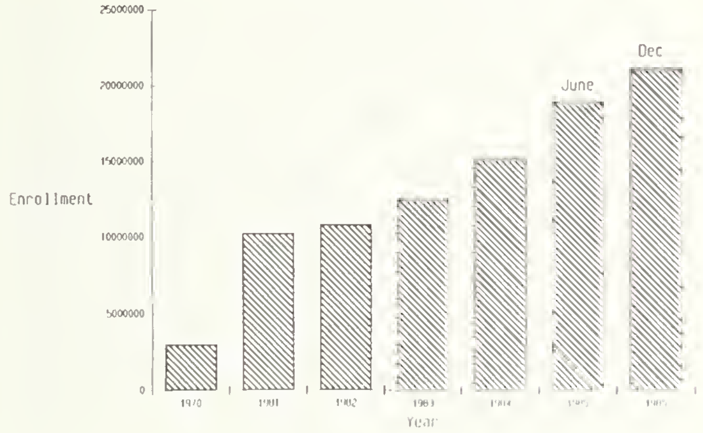
[10] *See, e.g.*, H.E. Frech III, "The Long-Lost Free Market in Health Care: Government and Professional Regulation of Medicine," in Mancur Olsen, ed., *A New Approach To The Economics of Health Care*, American Enterprise Institute, 1981, pp. 44-66, especially p. 58 and the references cited in note 28.

number of HMOs and in the number of persons enrolled in them. The picture of consistent expansion is clear. Nor is there any recent sign of slowdown. In 1985 and 1986 the number of such organizations increased more then 40%, from 337 to 480. The rate of growth in total enrollment was an astonishing 22.4% in 1984 and 25.7% in 1985, according to a forthcoming article by David W. Emmons written for the Center for Health Policy of the AMA.[11]

Figure 5 Growth in HMO Enrollment
June 1970 to December 1985



Growth of the PPOs (preferred provider organizations) is reported to be even more rapid. The number of PPOs exploded from a mere 13 such organizations in 1980 to 454 in 1986. The 1985 total PPO enrollment had reportedly exceeded 12 million, while that in HMOs was a bit less than 19 million.

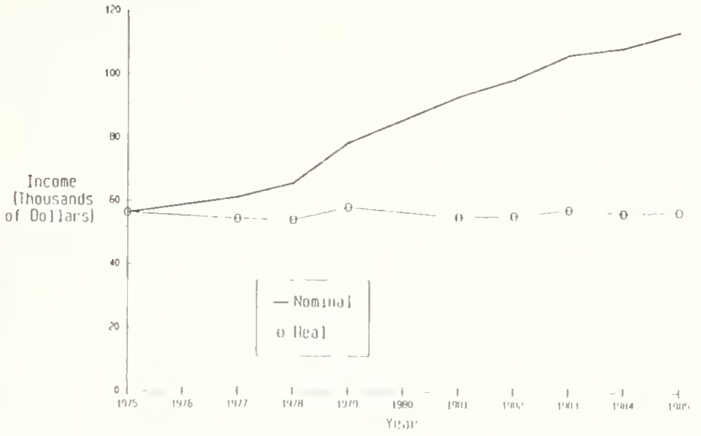
These data make it clear that the structure of the medical care industry is undergoing a dramatic metamorphosis, and that the change is in the direction of increased competitiveness.

D. Trends In The Real Earnings Of Physicians

The clearest evidence of growing competitiveness in the medical care market is the available data on the earnings of physicians. If competitiveness had been declining, we would expect to see a persistent rise, both in earnings after correction for inflation and in earnings relative to other occupations.

AMA surveys (see AMA Center for Health Policy Research, *Socioeconomic Characteristics of Medical Practice, 1986,* p. 17 ff.) report the trends in both nominal and real net physician incomes for the decade 1975-1985. During this period, when the income figures are not corrected for the effects of inflation, we find that incomes have approximately doubled, on average, rising from $56,400 to $113,200—an average annual rate of increase of about 7.2%. However, because during this period the Consumer Price Index also doubled, *real* average physician income at the end of the period was almost exactly where it had begun, at $56,600 in 1975 dollars. In 1986, this figure rose slightly to $58,700 in 1975 dollars—constituting a modest 0.5% increase per annum over the preceding eleven-year period. The full time path of real and nominal physician income for the ten-year period is reported in Figure 6.[12]

Figure 6 Nominal and Real Net Physician Income,
1975 to 1985



These data then show no sign of increasing market power. Thus, they rule out both physician greed and growth in market power as tenable explanations of the core problem—the systematic, persistent, and substantial pattern of increase in the *real* prices of medical care services.

Moreover, the income data permit us to draw one further conclusion, when the basis for comparison is modified slightly. The proper basis for comparison to determine whether the level of earnings in an industry exhibits any sign of a monopoly component is the earnings in fields likely to constitute effective competitors for the talents of potential market entrants. For if the industry is truly competitive, and entry into it and the comparison industry is not substantially impeded, one can expect to see earnings in the two tending toward some sort of parity. If earnings in one of these industries were for some substantial period to be out of line with those in the other, then potential entrants would be attracted into the better compensated of the two, while the other industry would find itself short of replacements for those who were leaving it. The influx of personnel into the relatively high-income industry would tend to drive down earnings there, while the opposite would occur in the relatively low-income industry. Parity is, then, the expected end result of this characteristic earnings equalization process, which is the hallmark of true competition. The fundamental implication of this analysis for our purposes is that if incomes are falling in one industry relative to incomes in alternative occupations, then this is strong evidence of growing competitiveness in that industry.

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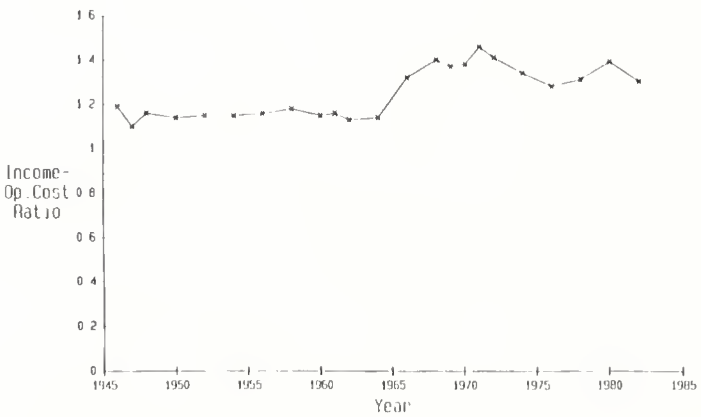
[11] David W. Emmons, "Changing Dimensions of Medical Practice Arrangements," *Medical Care Review* (forthcoming).

[12] The figures for 1986 recently released show that in this year physician incomes rose 6.5% on average, the rise (like that of university professors) representing, after a long hiatus, a rise well in excess of the 1.1% rate of inflation and the 4.4% rise in average earnings of American men. Still, this was largely the result of longer hours of work, with the mean fee per office visit manifesting the lowest rise in 10 years. Predictably, the rises in incomes have been denounced as "outrageous" and "scandalous." *The New York Sunday Times,* Section 1, Nov. 22, 1987, p. 43.

This is the approach that was followed in the study of trends in the competitiveness of physician supply by Dr. Noether *(loc. cit.)*. Figure 7, covering the period 1946-1982, provides the pertinent information. Using the standard terminology of economics, Dr. Noether refers to earnings in other relevant occupations as "physician opportunity costs," meaning the alternative income earnings that the medical student foregoes in the future by deciding to become a doctor. The graph shows that this ratio of physician "income-to-opportunity cost" fell slightly over the long interval 1946-1964, a period of nearly twenty years. It then rose over the next eight years or so. However, since 1972 the ratio has *fallen* substantially, giving up about half the gain of the preceding eight years. Thus, for at least a decade, relative physician earnings have indeed fallen in the manner one expects to find in a market whose competitiveness is increasing.

Figure 7 Physician Income-Opportunity Cost Ratio, 1946-1982



Dr. Noether also subjected the available evidence to more sophisticated econometric tests, proceeding on the basis of a reasonable economic model, and observing all the standard statistical precautions. Her study concludes that the index of market competitiveness[13] ". . . has moved toward the competitiveness extreme since 1965. This rise in the degree of competition is estimated to have increased physician stock [*i.e.*, the number of physicians] by 6-20% and concomitantly decreased medical incomes by 19-45% [below what they would otherwise have been]" (*op. cit.* p. 503).

E. Conclusion: Rising Medical Prices Are Not Ascribable To Declining Competitiveness

All the evidence thus leads to the conclusion that the rising price of medical care, which is a legitimate source of public concern, cannot be ascribed to declining competitiveness of the medical care markets or to any enhanced ability of doctors to extract higher fees from their patients. The competitiveness of the markets has been growing, and since the mid-1970's real physician incomes have not risen. Dispassionate consideration of these facts, even by the severest critics of our medical care system, can yield no other conclusion. We must therefore turn to some other explanation if we are to hope to understand the true causes of the problem, and to design policies to deal with it.

(This is the first part of a two-part article)

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[13] This index is the weighting parameter, w, which was described in footnote 8, *supra*, outlining Dr. Noether's model. It is, in essence, a measure of the current position of the physician supply market in a scale with pure monopoly at one end and perfect competition at the other, so that a result w=0.85, for example, could be interpreted, roughly, to mean that the market's performance was some 85% of the way toward the attainment of the attributes one would expect to observe under the theoretical state of perfect competition.

Protecting the Uninsured

Use of State Risk-Pools

AMA COUNCIL ON MEDICAL SERVICE

THE American Medical Association (AMA) has developed a series of proposals during the past few years to extend health expense protection to the uninsured through the use of state risk-pooling programs. The Council on Medical Service has studied potential modifications in current AMA policy regarding state risk-pools that might make the concept more broadly acceptable while continuing to provide needed protection for this population. This report summarizes the Council's deliberations and presents recommendations for modifications in this risk-pool approach.

Background

Financing health care for the uninsured continues to be a growing concern as the number of people without adequate health expense protection increases. Information published by the Employee Benefits Research Institute, regarding the March 1986 Current Population Survey conducted by the US Census Bureau, indicates that in 1985 approximately 35 million US citizens under age 65 years were considered to be uninsured for health care expenses (an increase of 15.5% from 1982). Characteristically, the uninsured are a heterogeneous group. A significant portion are poor or near-poor, but a majority are employed or are dependents of workers. In 1985, more than two thirds of the uninsured (69%) were in families in which the primary family worker was employed full-time. Although the data are sparse, it is likely that a majority of uninsured employed persons either worked for a small firm or were self-employed. These are persons whose economic status precluded their inclusion under tax-supported programs such as Medicaid, but most of whom found it financially difficult to purchase private health insurance coverage.

In addition, most estimates indicate that there are approximately 1 million persons who are considered to be "medically uninsurable." These are persons who are either unable to obtain health insurance coverage or who can obtain such coverage only at extremely high rates because of poor health status, medical history, or employment in a medically hazardous occupation.

The AMA has a long-standing concern with problems related to uncompensated care. During the past four years, the AMA has made a number of recommendations for extending health insurance protection to the uninsured. Proposals to this end were made in board of Trustees Report NN (1983 Annual Meeting) and Council on Medical Service Reports D (1983 Interim Meeting), A (1985 Annual Meeting), J (1985 Interim Meeting), and C (1986 Interim Meeting).

These proposals emphasized the desirability of retaining health expense protection for the uninsured population in the private sector to the degree possible through the formation of state risk-pools. Current AMA policy calls for the following steps to address the needs of the uninsured:

1. *Enactment of legislation in each state to:*

- Establish a risk-pool program to provide adequate health insurance coverage at a premium slightly higher than the standard group rate to both (*a*) those who are unable to obtain such coverage because of medical considerations and (*b*) medically standard risks who could afford, but presently lack access to, such group coverage.
- Establish programs to provide publicly funded vouchers for assisting low-income individuals in the purchase of state risk-pool coverage, with different levels of beneficiary premium cost-sharing based on ability to pay.
- Establish state indigent-care pools funded by general revenues from which funds would be distributed to providers in proportion to the volume of uncompensated care rendered, providing adequate and equitable reimbursement for provided services.

2. *Changes in federal legislation to:*

- Require employers to purchase group health insurance coverage from an entity participating in the state risk-pool, if such a pool is available, to deduct the cost of their coverage.
- Require the extension of employer-provided health insurance coverage for up to four months following unemployment, with the employer's premium contribution remaining the same as it was during employment.
- Allow persons paying 100% of the premium for health insurance coverage that provides benefits comparable with those specified in Council on Medical Service Report H (1983 Interim Meeting) to deduct the full cost of their premiums separately from their gross income.

From the Council on Medical Service, American Medical Association, Chicago.

Report A of the Council on Medical Service, adopted by the House of Delegates of the American Medical Association at the 1987 Interim Meeting.

3. *Support for:*

- The formation of multiple employer trusts to allow small employers to offer directly or to purchase adequate health insurance coverage.
- Exploration by legislators, business groups, and the insurance industry of the feasibility of providing tax-supported subsidies to small and low-wage employers to assist them in purchasing adequate health insurance coverage that they otherwise could not afford for their employees.

Proposed State Risk-Pool Modifications

Risk-Pool Eligibility Requirements

According to the Employee Benefits Research Institute study, approximately 8 million (24%) of the uninsured reported family incomes of between $20,000 and $40,000 in 1985, and 4 million people (12%) reported having incomes of $40,000 or more. It is reasonable to assume that the majority of this group could afford to purchase private health insurance coverage. *However, for the 22 million (63%) of the uninsured who have incomes less than $20,000, state risk-pools remain a needed alternative.*

The Council on Medical Service believes that a change in AMA policy regarding eligibility for state risk-pools is merited to restrict eligibility to (*a*) the medically uninsurable and (*b*) those whose economic circumstances are such that they are unlikely to be able to afford to purchase individual health insurance policies. Such a change would ensure use of the pool mechanism only for those who truly need it, while preserving the opportunity for the health insurance industry to market individual health policies.

As indicated in its Report J (1985 Interim Meeting), the Council on Medical Service believes that it is administratively advantageous to cover both the medically uninsurable and those at standard risk who are uninsured under the same pool.

The Council's Report C (1986 Interim Meeting) recommended, and the House of Delegates approved, the use of publicly funded vouchers to assist low-income uninsured individuals in the purchase of pool coverage, with different levels of beneficiary premium cost-sharing based on ability to pay. For example, eligibility for vouchers could be extended to those individuals not eligible for Medicaid but with incomes up to 150% of the federal poverty level, adjusted by a state cost-of-living modifier. These are the people who are generally characterized as the near-poor and poor uninsured. Those with incomes between 150% and 200% of the poverty level would also be eligible to purchase pool coverage, but at their own expense.

Financing Excess Pool Costs

Current AMA policy calls for risk-pool premiums to be set at not less than 110% and not more than 125% of the average premium for comparable group coverage by insurers in the state, recognizing that these minimum and maximum limits may require modification as experience is gained. The Council recognizes the likelihood that the costs of risk-pool coverage will not be met totally through enrollee premiums with these limits. In that regard, current AMA policy calls for costs of pool coverage in excess of premium income to be met through assessment of all insurance carriers that participate in the pool, with the understanding that these excess costs may be passed on to enrollees in the other plans offered by each carrier. Current policy also recommends that all health care underwriting entities in the state, including commercial carriers, nonprofit medical service plans, health maintenance organizations, and self-insured groups, should be required to participate in the risk-pool. By having all carriers participate, the pool would be ensured a financial base sufficient to support the program and to achieve a fair sharing of the risks.

To achieve such broad participation, the AMA has supported federal tax code amendments to require employers to purchase group health insurance coverage from an entity participating in the risk-pool or, if self-insured, to participate in the pool, if such a pool is available, to deduct the cost of their coverage as a business expense. The AMA has also supported the amending of the federal Employee and Retirement Income Security Act to allow states to require the participation of self-insured persons in risk-pools. Draft legislation to effect both of these changes has been developed by the AMA.

The Council recognizes, however, that there has been and continues to be strong opposition by self-insured plans—which in 1985 wrote 58% of employee group coverage—to these legislative objectives. Accordingly, the Council believes that an alternative approach of defraying any excess of pool payout over premium income through state tax revenues, rather than through assessments of the carriers that participate in the pool, should also be pursued. This change would disperse such costs over all taxpayers rather than just over other policyholders of participating carriers and self-insured plans. In addition, it would make the risk-pool a purely state-administered entity, with no requirement for carrier risk assumption, although carriers might contract to provide administrative service to the pool.

As a general principle, the Council believes that spreading excess costs of pool coverage over as wide a base as possible is desirable. The assumption of risk for excess pool costs by all health care underwriters in a state and alternatively the meeting of such costs through state tax revenues are both acceptable approaches to this goal.

Summary

Society already bears a large part of the costs attributable to the lack of adequate health expense protection for the uninsured, whether through lost man-hours and productivity resulting from the postponement of needed medical attention or through defraying the economic burden of uncompensated care. The question, therefore, is not whether such costs should be met, but how they can be met in a way that best maintains and preserves the health of the needy while apportioning this cost equitably over all sectors of the American economy.

The Council on Medical Service believes that the establishment of state risk-pools with the modifications suggested in this report, coupled with the other AMA policy initiatives identified at the beginning of this report, will go a long way toward meeting the needs of the uninsured population.

Recommendations

Based on its continuing study of this problem, the Council on Medical Service recommends that the AMA:

1. Modify its policy concerning use of state risk-pools to (*a*) recognize the acceptability of using state tax revenues as an alternative source for defraying excess pool costs and (*b*) support the restriction of eligibility for such pools to the medically uninsurable and those whose economic circumstances make it difficult to purchase individual health insurance policies in the private sector.

2. Continue to pursue vigorously the above goals through federal and state legislative efforts and other appropriate means.

Members of the Council on Medical Service include the following: Donald K. Crandall, MD, Muskegon, Mich, Chairman; Grant V. Rodkey, MD, Boston, Vice Chairman; Robert C. Babkowski, Rochester, NY; Daniel K. Billmeyer, MD, Oregon City; Robert D. Burnett, MD, Los Altos, Calif; Roy R. Deffebach, MD, Redwood City, Calif; John A. Finkbeiner, MD, New York; T. Reginald Harris, MD, Shelby, NC; Perry A. Lambird, MD, Oklahoma City; Kermit L. Newcomer, MD, La Crosse, Wis; Albert J. Osbahr, MD, Huntington, WVa; Mario E. Ramirez, MD, Rio Grande City, Tex; and Nicholas M. Griffin, Chicago, Secretary.

AROUND THE STATE

American College of Physicians, Connecticut Chapter

The third annual regional meeting of the Connecticut Chapter of the American College of Physicians will be held at Danbury Hospital on Friday and Saturday, 21 and 22 October 1988. Dr. Matthew Miller, Associate Clinical Professor of Medicine, Yale University School of Medicine, and Chief of the Pulmonary Section at Danbury Hospital, is in charge of the scientific program. Infectious diseases, oncology and cardiology are the major areas to be covered by the Friday program. Saturday's program is dedicated to professional opportunities for the internist.

For more information call Dr. Matthew Miller (797-7331), Dr. Joseph Belsky (852-2303), or Dr. Joseph Cleary (797-7387).

Lothar R. Candels, M.D., Avon pediatrician, was graduation speaker at commencement exercises for Avon High School's Class of 1988.

Peter J. Deckers, M.D., of Avon, professor and head of surgery at the University of Connecticut School of Medicine is the first person to hold the University's newly-established Murray-Heilig Chair in Surgery.

J. Robert Galvin, M.D., a family practitioner in Glastonbury, has been commissioned Commanding General of the U.S. Army and Commander of the 804th Hospital Center with responsibility for managing all Army medical reserve units in New England.

Harry R. Gossling, M.D., professor and head of orthopedic surgery at the University of Connecticut School of Medicine, has been appointed as first occupant of the Harry and Helen Gray-Harry Gossling Chair in Orthopedic Surgery.

Martin L. Snyder, M.D., of Avon, was named chief of Mt. Sinai Hospital's peripheral vascular surgery section. He will also serve as director of the vascular laboratory.

Manny Myerson, M.D., was a guest on WICC and on WGCH in Greenwich speaking on topics ranging from hearing loss to doctors' fees. **Paul Dolinsky, M.D.,** chairman of the ad hoc Committee on Medicare, discussed Medicare, and **J. Robert Galvin, M.D.,** spoke on exercise in hot weather on WPOP Newsradio in Hartford. **Raymond Fortier, M.D.,** discussed summer skin care and **Raymond Chagnon, M.D.** spoke on spinal cord injury, also on WPOP.

Meetings

Connecticut State Medical Society's Semi-Annual Meeting will be held on Thursday, 17 November at the Ramada Inn, North Haven.

Fairfield County Medical Association Semi-Annual Meeting will be held Tuesday, 4 October, at the Marriott Hotel, Trumbull.

Hartford County Medical Association Semi-Annual Meeting will be held Tuesday, 27 September, at the Marriott Hotel, Farmington.

Litchfield County Medical Association Semi-Annual Meeting will be held Friday, 7 October, at the Torrington Country Club, Torrington.

Middlesex County Medical Association Semi-Annual Meeting will be held Thursday, 13 October, at the Falcon Pavilion, Middletown.

New Haven County Medical Association Semi-Annual Meeting will be held Wednesday, 12 October, at the Ramada Inn, Meriden.

New London County Medical Association Semi-Annual Meeting will be held Wednesday, 19 October, at the Sheraton Hotel, Norwich.

Tolland County Medical Association Semi-Annual Meeting will be held Tuesday, 18 October, at the Sommer's Inn, Somers.

Windham County Medical Association Semi-Annual Meeting will be held Thursday, 27 October, at the University of Connecticut Faculty Lounge, Storrs.

A Piece of Her Heart

STEPHEN J. SONTAG, M.D.

HIS chest pains had worsened in the last few years. His GI films were normal. The cardiac catheterization one year earlier showed strikingly normal coronary arteries. I knew there was more to this man's problems than just the heart and the gut. I knew my limitations. I needed help.

Despite potential resistance from the house staff, I decided to admit him. Fresh opinions and expert consultations would be most welcome, and there would be ample time for him to talk, to vent, if necessary to cry. Real communication after all these years might be the most effective therapy. The stage was set. He accepted admission.

Within two hours I received a call.

Resident: "Why was he admitted? There's nothing wrong."

Optimistic that we could work together to help our patient, I called the service together to explain the plan.

Student: "I did the history and physical and can't find anything wrong. The ECG and chest film are normal, and stool is negative for occult blood. At $300 a day, how can you justify putting him in the hospital? Couldn't this be done as an outpatient?"

I could see that the student was learning well. Within two hours he and his resident had already determined that hospitalization wasn't necessary.

I successfully hid my frustration as I asked the student if he had obtained sufficient information about the man's past, his problems, his life, his family.

Student: "Yeah! He grew up in Europe and came here after his wife died. He smokes two packs per day and doesn't drink. Sure, he's got problems. We all have problems. But that doesn't justify admission. If he stopped smoking, he'd feel better. Besides, his pain doesn't sound cardiac, so he's safe to go home."

"Perhaps we should give him a few days in the hospital. We'll get to know him and order the appropriate consults," I said.

Resident: "You're the attending. What tests do you want? A Bernstein, endoscopy, esophageal manometry, and ultrasound of the gallbladder? While we're at it we'll get a lower GI film so we can get him out of here."

"I don't think he needs all those tests. Maybe you should start with a more detailed history. His life has been hell, and you'll probably understand him better by talking *with* him rather than *at* him."

I knew a great deal about his life. His chest pain began shortly after he arrived in America. It wasn't bad then. Many things had been worse. When he was younger, the pain didn't bother him; ignoring it brought relief. But he wasn't so young now. Forty years of memories had taken their toll. He never remarried, lived alone, and had no friends. Sunrise predictably was the end of another sleepless night—one more night closer to the end.

He really didn't care about the worsening of his pains. Well, he did and he didn't. He wanted to die so his misery would end. Well, maybe he wasn't certain.

Throughout the discussion, the intern remained silent. She was different from the others. During her educational years she supported herself by working as a waitress, nursing assistant, and taxi driver. Her struggling immigrant parents hardly could have helped financially. Although she was now successful, she hadn't forgotten where she came from. And for that reason alone I chose her service.

Rounds the next day brought both frustration and hope. The resident had seen only the ECG, and the student was awaiting test results. The intern, however, had made an attempt to find out what was on her patient's mind. She spoke *with* him, and I sensed she was beginning to understand.

Intern: "His childhood in Europe was great. He spoke three languages in school but Yiddish at home. Every Saturday his family would go to temple. He was studying to be a doctor when they came to the school and took him away. He never saw his parents again. He was sent to the camp in a freight car. He told me this: 'Each car was packed so full even the dead couldn't fall. A young girl next to me hummed a song as she clutched her dead baby. I blame myself for not getting rid of it—you know, the baby. I knew what would happen. In the morning the doors opened. She was still humming. They threw the kid on the ground. The mother screamed. They shot her through the head. I know it's my fault.'"

Student:"How does that relate to his present problems?"

Intern: "I need more time. Give me a little more time."

Resident: "We should get the test results and then get him out of here."

Perhaps I was naive. How could a nice suburban boy whose greatest tragedy was probably a high school heartbreak, who has never known fear, torture, or death, who has never needed to work, who comes home every night to a warm dinner, really understand this man's problems? What was I expecting?

STEPHEN J. SONTAG, M.D., Hines, IL.

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And the resident? A brilliant foreign medical graduate, the product of a well-to-do middle-class family. Shouldn't he understand? Perhaps not. After all, it was not he but his parents and his parents' parents who remember the Bataan death march, Corregidor, the rape of Nanking, the Burma campaign, the Amritsar massacre, the destruction of Manila.

The next day the test results came in. Everything was normal. The resident was more convinced than ever of the need for discharge. After all, nothing abnormal could be found. The psychiatrist had not answered the consult but had agreed to see him as an outpatient if necessary.

The student, still searching for organic disease or an abnormal lab test, seemed to be easing up. He was no longer fuming about the admission. There was hope.

Intern: "I wasn't on call last night, but I stayed until midnight. I can't believe it. He was like a skeleton after six months in the camps. Every day thousands from all over Europe were unloaded from the trains. Thousands every day went to take showers. They never came out. He was assigned to the ovens. Thousands every day . . . day after day for weeks . . . and months.

"One day he was looking through the barbed wire fence at the women's quarters. There were four wooden barracks, each with about one hundred women. They huddled together, covered only by pieces of cloth. It was so cold that everyone had frostbite. The women were forced outside, one hundred at a time. The guards laughed as they opened the water hoses. Granddaughters, daughters, sisters, mothers, grandmothers, freezing to death—ten minutes and they were all dead. A little girl threw herself on her frozen mother. She begged her not to die. The guards picked up the kid . . . and tossed her alive on top of the moving truck with the frozen corpses. That was the last time he saw his daughter."

There was silence in the small conference room. There was nothing left to say.

There was no longer talk of early discharge. The intern continued to strengthen the bonds between herself and her patient. He trusted her completely. Each day brought new information, and perhaps rational explanations for many of his problems. The intern talked of his loneliness, of his feelings of abandonment and helplessness while thousands died daily in the camps. She told us how in the postwar years he had believed that his newly adopted country did all that it could to stop the extermination. She explained that his chest pain was tolerable then, but rapidly worsened when claims were made of US interference with the efforts by others to rescue his people. He reached his lowest point when his president visited Bitburg Cemetery. He again felt abandoned and alone, with nobody who could understand, and nobody willing to listen.

So why did he want to go on living? Because his ancient tradition and his years in the camps taught him that with life—no matter how bad—there is hope.

When the hour for discharge arrived, it was the appropriate time. He truly had received maximal hospital benefits. I was convinced that the house staff was wiser and smarter. After all, understanding the art *and* the science of medicine usually takes years of experience.

And the intern? Well, she didn't need praise. She understood that 20th-century technology was unlikely to be helpful in her patient's therapy and that good medicine involved far greater thought than merely interpreting a few laboratory tests. She was a real doctor.

During his hospital stay and for the three weeks after discharge he had no more chest pains. To his most cherished friend and confidante he wrote: "To my lady doctor. You have given me a piece of your heart. It brought freedom from my torment. I now possess the only real peace I have known since childhood. I am ready to join my wife and daughter. Thank you."

And the student and resident? We met a few months later in the cafeteria. Anxious to know how they felt, I told them of the outcome, about the few peaceful weeks before he died. I was interested to see how they had matured, how much they had learned about the art of medicine. I have always been optimistic about people's willingness to change once they are exposed to the realities of life.

Resident: "So why do you think he died?"

Student: "I knew we should have done endoscopy."

View from the Hill

JAMES E. BRYAN

DESPITE forced feedings of "market motivation" and price "competition" for physicians, and stringent cost-containment efforts by federal and industrial buyers of health care services, our national health care budget continues its upward course. This growth does not yet include funding for long-term health care insurance, an increasingly urgent issue.

Such well-respected health economists as MIT's Lester Thurow, Columbia's Eli Ginsberg, and Harvard's David Kinzer have, in their various ways, recently discussed (1) the futility of treating national health care needs as a budget-deficit issue rather than as a vital social problem (Thurow); (2) the destabilizing consequences of the corporatization of hospital and medical institutions (Ginzberg), and (3) the evermore egregious failure of the "price-competitive, deregulated health economy" to distribute adequately or equitably essential health care services, or even to sustain previously attained standards of access to care (Kinzer).

Price competition and the "market spirit," particularly when the marketeers are growing in numbers, Ginzberg warns, tend to defeat rather than help cost containment. Burgeoning supply capacity, aggressive marketing efforts, the encouragement of duplicative or marginal services and the stimulus to use them swell society's investment in the medical establishment and foster the deepening medicalization of the populace.

Ginzberg points to the relative stability of the health care system from 1910 to 1970, when the medical profession enjoyed unchallenged leadership in the health care enterprise, when hospitals flourished under local control and responsibility, and when cross-subsidization between "haves" and "have nots" was easy and universally accepted. The government rose to the challenge of research, and many new academic centers developed.

However, the era of destabilization (since 1970) has turned many physicians into employees, and hospitals have been losing their community identities, autonomy, and cherished responsibilities. Cross-subsidization is evaporating. Many large employers have moved to self-insurance, undermining what is left of the community-wide rates and motivations of earlier days.

Self-insuring employers, pressing for lower costs, make it difficult to bring poor or marginally healthy workers into the system. These employers are also unlikely to show a lively concern for the support of medical research and professional education. Full compensation coverage for employees plus the tax subsidy of insurance costs for both employers and workers have taken the lids off prices and utilization, which are subject to such restraints as are exercised by the prospective payment formulas and activities of the PROs.

The effects of Medicare and Medicaid on the interface of the community with the community hospital have been broad, deep, and disturbing. With third parties reimbursing more than 90% of total hospital costs, trustees and administrators no longer need to look to traditional local philanthropy to defray annual deficits or for capital outlays. Local trustees, relieved of their erstwhile active responsibility for the conduct of administrators and medical staff, are diminished as public figures of service and authority in an area of vital concern to the community.

This, of course, opens the door for for-profit hospitals. Congress has, perhaps unwittingly, fostered the for-profit concept by creating the post-payment (DRG) system, by basing Medicare payments on inflated values of hospital care, and by providing ample return on the equity investment of the new owners.

Even as Kinzer finds the "hopes for a price-competitive, deregulated health economy . . . fading," he points to several important public impulses which, if realized, will generate regulatory structures of their own: (1) growing public sentiment asserting the universal human right of access to health care; (2) substantial and increasing public support for a comprehensive, coordinated national medical care and health promotion program, and (3) revived public interest in good local hospital service, "edging toward the 'public utility concept.'"

The two most formidable phenomena driving our society toward a coordinated health care program are (1) unacceptably high rates of morbidity and mortality among women, infants, and children—especially among minorities and the poor (the correlation between poverty and illness has once more become a blatant reproach upon a proud and affluent society), and (2) the exploding burden of care for the elderly, infirm, and chronically ill.

The Brookings Institution of Washington recently released a report to Congress on the problems of financing the increasing costs of long-term nursing home and at-home care of the ever-growing elderly population in the United States. Private insurance alone is inadequate

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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to the need, according to the report. Assuming that the average elderly person can afford 5% of his or her income for a private long-term care insurance policy, which costs $600 per year at age 67 and rises to $1,500 at age 79, such insurance could be purchased by 26 to 45% of the elderly by the year 2018; however, the report estimates that this insurance would cover "only 7 to 12% of total nursing home expenditures." At-home and nursing home expenditures now total $42 billion a year for those paying for such services, with about one-half paid by Medicaid.

The Brookings report also reveals that even with presently unlikely extensions of current tax sources, such as application of a higher Social Security payroll tax rate to *all* earnings together with widespread private insurance and expanded Medicaid, financing would still fall short. Joshua M. Wiener, a senior fellow at the Brookings Institution, predicts that society will wind up paying for such care in any event. "The issue," he says, "is whether these costs will largely be borne by the unfortunate few who end up in nursing homes or needing home care, or spread more broadly over the population as a whole."

Dr. Wiener concludes on a note not very reminiscent of the musings of the citizens who aspire to dwell in the White House come next January: " Long-term care," he characterized as "one of the more tractable social problems. Unlike crime, poverty, teenage pregnancy or racism, we do in fact know how to solve it. The answer is to raise and spend money."

Dr. Wiener refers to a pressing social need now just beginning to be seriously recognized in Congress. Because the present tax system cannot support long-term health care insurance and because the health care budget is already overextended, new revenue arrangements are inevitable.

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Editorials

Guest Editorial

Public Health in Connecticut

I look out at the people of Connecticut and I see, overall, a healthy and prosperous community. Our citizens are well educated, well housed, hopeful for the future. But there are terrible pockets of despair here and there, mostly in our cities.

The terrible epidemic of AIDS has already killed more than *five hundred human beings* in our state and is expected to take the lives of an estimated 2,000 Connecticut residents by the year 1990.

Our young people are smoking and drinking and, too many of them, abusing other substances. We know that teenagers are sexually active: we had 71 cases of syphilis and 3,551 cases of gonorrhea in persons under 20 years of age last year, and so they are probably passing these diseases as well as the AIDS virus to each other.

Our old people fare better. We have one of the best organized and best policed nursing home systems in the United States. But sudden unforeseen bankruptcies and other financial woes have wreaked havoc on scores of senior citizens who deserved better than the treatment they got.

I reserve my deepest personal wrath for the problem of teenage pregnancy, of children giving birth to babies. One of my staff commented, soon after I became Commissioner, "You know, the grandmothers I deal with are sometimes only thirty years old."

Of course I knew that these things happened, but somehow his remark brought it home for me. For a number of reasons young girls in our society see having a baby as a potential way out of an unbearable lifestyle. There has to be a better way to improve their lives!

In Hartford in 1985 the infant mortality rate was 30! That means that out of every 1,000 live births, 30 infants died before they were a year old. That's intolerable, shameful to the state of Connecticut. (Incidentally, although I list them one after another, the infant death rate does not go hand in hand with teenage pregnancy. It seems to be more reliably linked to poverty and social improverishment than age.)

There are, of course, areas in which we shine, as our system for Emergency Medical Service. Connecticut can be proud of the hundreds of volunteers who have undergone rigorous training so that they can be awakened in the middle of the night and sent into chaotic and sometimes downright dangerous situations to rescue human life. From the helicopter crew of Life Star down to the gallant dispatchers all over the state, they do a first rate job.

And our Nutrition Section! These people administer the federal program we call WIC — that's for women, infants and children. They pass out $1,000,625 in redemption certificates to something like 44,000 clients every month.

The major worry in the WIC Program is that they are not reaching *every* potential client. We are just about to remind doctors to connect their patients to this important nutrition supplement program, for it does an enormous amount of good, day in, day out, with very few kudos.

In the year and one half since I became Commissioner, I have spent a good deal of time thinking about the holes in the fabric of public health that I see. I have begun to address those problems through a restructuring of my department. First of all, I took two important functions and placed them within the office of the Commissioner. There is now a Center for Health Planning and a Center for Health Communication whose chiefs report directly to me.

Planning and policy analysis are critical to the success of any public health organization. Not only do they give me guidance as to where money should be allocated, they document our failures and our lapses. At the Department of Health Services today we are not doing planning for its own sake. We are planning for the peoples' sake.

At the same time I am attempting to give public health education real impact. I have integrated the former Chronic Disease and Public Health Education Sections into one Office of Health Education. Internal and external communications functions complete the work of the Center for Health Communication.

These changes have been completed this year — but there is still a big job to do, particularly in the field of urban hazards. I hope I will have your support.

Frederick G. Adams, D.D.S., M.P.H.
Commissioner
State of Connecticut
Department of Health Services
Hartford, CT 06106

Editorials are expressions of personal opinion and do not necessarily reflect the policies of CSMS.

Connecticut Medicine does not hold itself responsible for statements made by any contributor.

The President's Page

CSMS Doctor Receives $99,000 in Countersuit Settlement

James F. Flint, M.D., a Waterbury physician, has settled his "countersuit" against Attorney William R. Moller, the Hartford lawyer who had represented a plaintiff in an earlier malpractice action that had been resolved in the doctor's favor. Dr. Flint has received $99,000 as a settlement.

The Connecticut State Medical Society had thoroughly reviewed the proposed case at Dr. Flint's request in 1985, and on the recommendation of its Ad Hoc Committee on Countersuits, the Society's Council had approved supporting Dr. Flint through the payment of legal fees connected with his countersuit.

In 1980 Attorney Moller had instituted a lawsuit against Dr. Flint, claiming that Dr. Flint, a cardiologist, had been negligent and careless in certain respects in his treatment of a patient. A substituted complaint was filed against Dr. Flint in January of 1983. On April 28, 1983, following many days of trial, the action against Dr. Flint was withdrawn, with no payment to the plaintiff by Dr. Flint or on his behalf.

In 1986, Dr. Flint sued Moller, alleging that the earlier lawsuit had been commenced and prosecuted without probable cause and with a malicious intent unjustly to vex and trouble Dr. Flint; and that as a result of the earlier lawsuit and the publicity it generated, Dr. Flint had suffered damages. Attorney Moller and his law firm, through their attorneys, denied the essential allegations of Dr. Flint's complaint.

After substantial pretrial discovery occurred, including the deposition of Attorney Moller, the case was settled in June 1988. The settlement amount paid to Dr. Flint on behalf of Attorney Moller and his law firm was $99,000.

A fellow of the American College of Cardiology, Dr. Flint graduated from Harvard University, and received his M.D. from Columbia College of Physicians and Surgeons. A member of the New Haven County Medical Association, he is in private practice in Waterbury, and attends at Waterbury Hospital.

Norman A. Zlotsky, M.D.
President

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Reflections on Medicine

No Easy Matter

ROBERT U. MASSEY, M.D.

> With what strift and pains we come into the World we remember not; but 'tis commonly found no easy matter to get out of it. Many have studied to exasperate the ways of Death, but fewer hours have been spent to soften that necessity.[1]

Thomas Browne could hardly have imagined how cleverly we would "exasperate the ways of Death" in the late 20th century; but that his 17th-century mind would have been as perplexed as ours is doubtful.

I recall hearing an English physician describe the principles of hospice care 12 years ago or so. "You must reach a point," he said, "when you quite consciously and deliberately decide, with the patient, to do nothing more to treat the disease, but rather that you will bend all your efforts to relieve the patient's pain, physical, mental, spiritual, and economic." To stop wrestling with death, to quit the post seemed to me, at first hearing, to violate the most sacred principle of medicine. Weren't we winning the battle against infectious diseases, maybe against cancer, quite clearly against heart disease? Who could know what cure tomorrow would bring, how could anyone give up? *Dum spiro, spero,* we had learned in 10th grade Latin, and now understood what it meant!

The old hospice idea was reborn among nurses and their patients; they knew, often better than we doctors did, when the jig was up; they would benignly tolerate our barely effective efforts to manipulate electrolytes, juggle antibiotics (there were only three or four), add ascorbic acid or aminophyllin to mercuhydrin, and order liters of protein hydrolysate. We could do all that unobtrusively, fighting the battle, while they were attending to the dying patient's comfort, changing his position, rubbing his back, keeping his mouth moist and the bed dry, keeping him company. We did little to interfere.

But then in the space of two decades it has all changed; our machines can prolong dying for days, weeks, months, even years. Technology has a way of becoming its own end. In Dr. Forman's essay, which I mentioned last month, describing Mr. Rosen's long, painful death (*New York Times,* 12 April 1988) we see the image of late 20th-century medicine that our 21st-century descendants will surely wonder at:

> Highly trained technically, we often lack the emotional grounding to confront the pain of inevitable death. While medical care is implemented reflexively out of both legal and philosophical obligations, a sense of guilt and regret exists in many of us who prolong such a grim course.

Our defense is rarely medical or philosophic; more often we are frightened of the legal swamp, "the myth of the incarcerated physician and the specter of the large civil verdict haunt our nation's intensive care units."[2] Yet when hospitals and physicians have honored their patients' requests, or the requests of surrogates, there has never been a successful action against them.

Early in the last century when Benjamin Rush and others were advocating heroic bleeding and purging, many of their patients turned to the homeopaths, hydrotherapists, Thomsonians, and Christian Scientists. It would be oversimplifying to conclude that heroic medicine declined only because the public was taking up with the sectarians, but that was not without its effect. It will take public pressure again to make us temperate in the use of modern heroic therapy, to stop probing, testing, intubating, monitoring, treating, resuscitating when there is no point. Our patients, in increasing numbers, will encourage us to talk to them first, rather than to whisper in corridors with their families, about how their last illnesses are to be managed. Those advance directives are entirely theirs to make while their minds are clear enough, and our job is to help them to understand what the future will be like, to employ our skill in prognosis: "I hold that it is an excellent thing for a patient to practice forecasting."[3]

A senior surgeon recently expressed to me his perplexity over this matter ever being a problem; "I can't imaging," he said, "not *always* discussing these things with both patient and family."

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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1. Browne Sir Thomas: *Christian Morals,* part II, sect. XIII; also in *Letter to a Friend,* sect. V.
2. Armstrong PW, Colen BD: From Quinlan to Jobes: the courts and the PVS patient. *Hastings Cent Rep* 1988;18(February/March):37-40.
3. Hippocrates, *Prognostic,* I.

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From the Executive Director's Office

COUNCIL MEETING

Thursday, June 2, 1988

Organizational Meeting

The organizational meeting of the Council for 1988-89 was called to order by the President, Norman A. Zlotsky, M.D. Following some opening remarks, which stressed the importance of studying and becoming well-informed on the agenda items and the introduction of all Council members, elections of a Chairman and Vice-Chairman of the Council for 1988-89 were held. It was VOTED to elect Guy W. Van Syckle, M.D., Danbury, Chairman, and Joseph C. Czarsty, M.D., Oakville, Vice-Chairman.

Attendance

Present in addition to the Chairman, Dr. Guy W. Van Syckle were: Drs. Ahamed, Beck, Blum, Bobruff, Bonner, Eslami, Freedman, Hollister, Jr., Kaufmann, Ill, McDonnell, O'Brien, Orphanos, Petrie, Reyelt, Jr., Robbins, Rose, Rubin, Sosa, Villa, Welch, Whalen, Jr., Zanker, Zeppieri and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Sullivan, Mr. Staples, Mr. Tomat (FCMA), Ms. DeLauro (HCMA), Mr. Freberg (NHCMA), Mrs. Reed (President, Auxiliary) and Mrs. Ganguli.

Absent were: Drs. Abbot, Chmieleski, Czarsty, Dardick, Fox, Kamens, Sadowski, Schwartz, Upham and Wetstone.

Reports from Physicians Serving on State and Federal Agencies

Dr. Beck reported that on June 9, some of the leaders of CSMS will meet with George Armstrong, Co-Chairperson of the Governor's Task Force on the Nursing Shortage and other members of the group. He reported that to date, physicians have had no official input, except for testifying at various hearings. This meeting will be an opportunity, in an informal way, to be heard by the Task Force.

Dr. Petrie gave a brief report on the recent meeting of the Council of New England State Medical Societies. He reported that at that time, the group received reports from all the states on topics of mutual concern. He stated that the total New England delegate voting strength at AMA meetings is 19. It was further learned at the meeting that the AMA has a tape on Medicare which has been used very effectively with legislators and suggested that perhaps the CSMS Committee on Legislation might like to use it.

Report of the President

Dr. Zlotsky reported on the defeat of the voluntary Medical Courtesy Card Program by an 18-18 tie vote, in the Senate, at 11:59 P.M., one minute before the close of the legislature. The mandatory aspect of the bill was the most objectionable part of the bill. The income guidelines remain the same as under the voluntary courtesy card program, $19,950 for individuals and $24,000 for couples (150% of CONNPACE guidelines). According to the Department on Aging, 68% of the elderly qualify under the established income guidelines. The state will now have to administer a program which was being carried out by CSMS, at its own expense. There was so much confusion in the public sector on what mandatory assignment meant, that a CSMS press conference was held shortly after the close of the legislative session which was well attended by newspaper and TV reporters. Most of the misunderstanding was that mandatory assignment was available to all the elderly regardless of income. The stories resulting from this conference indicated a better understanding of the law. A video tape was made of the press conference and is available to anyone who would like to see it. He also reported that a meeting was held with Commissioner Klink of the Department on Aging to discuss emergency regulations concerning their implementation of the program. The Department will be issuing new cards, but in the interim they would ask physicians to continue to honor the CSMS courtesy card and the CONNPACE card. It will probably take approximately six months to fullly implement the program. They will supply physicians with application forms which can be distributed to their patients. He urged that CSMS members support the Department on Aging in carrying on the program levels.

Dr. Zlotsky requested that all county legislative chairmen become members of the CSMS Committee on Legislation. It was VOTED to increase the committee strength to 28 to accommodate this proposal and add all county legislative chairmen to the committee roster.

Dr. Zlotsky also reported that the Governor's Fitness Committee, of which he is a member, are working on a proposal to have a Health and Fitness Day at the Capitol and feels that it would be very beneficial and good public relations to become involved in the program. The Governor's Fitness Committee meets at the Governor's pleasure and is not funded. As programs are developed, funding must be sought. He stated that when more definitive details on funding and programing are available, the Council will be informed with the suggestion that CSMS perhaps co-sponsor such a program.

Report of the Executive Director

(1) He recommended that the Council consider appointing a Bicentennial Committee over the next few months to plan the Society's Bicentennial celebration in 1992.

(2) Mr. Norbeck also reported on the mandatory assignment battle in the neighboring state of New York. The issue will be decided during the month of June, and the Medical Society of the State of New York is hoping that its voluntary program (patterned after the Connecticut effort) will be enough to satisfy the legislature.

(3) Also reported was an effort in Washington to strip the non-profit status of organizations which have profit making subsidiaries. Approval by the U.S. House Committee on Ways and Means and eventual passage by Congress could have a very severe economic effect on the CSMS and county medical associations. Congresswoman Barbara Kennelly (a member of Ways & Means) has been contacted and CSMS is cooperating with the AMA federation effort to prevent enactment of such legislation.

Resolution on Unrestricted Sale of Sterile Hypodermic Needles and Syringes

It was VOTED not to approve recommendations and resolutions submitted by Isadore H. Friedberg, M.D. for consideration by the Council re the unrestricted sale of hypodermic needles and syringes. The CSMS Committee on Public Health believes that approval of such action condones the abuse of drugs.

M.D. Health Plan

William A. Whalen, M.D. and Douglas A. Hayward, CEO of the plan, made presentations which included information on the historical performance of the plan and projected financial requirements and stated that they would reach a break even point by July of 1989. Following a lengthy discussion, it was VOTED that the Council, acting on behalf of the Connecticut State Medical Society, approve of the signing as co-guarantor a ninety day bridge loan in the amount of $600,000.00. It was also VOTED that the Council authorize the CSMS staff to develop a program in cooperation with MDHP to encourage the 1,000 physicians who had promised to join and didn't, to fulfill their promises now, and to solicit the other CSMS members who do not belong and encourage them to join.

"Medicine on Trial"

At the last Council meeting, it was VOTED to contact various individuals at the Yale School of Medicine requesting that an objective, scientific evaluation of the book and a report on the findings of the study. A letter has been received from Leon E. Rosenberg, M.D., Dean, stating that this book unjustly condemns the profession, reflects poorly on the University, and after a few more weeks of sensationalism, it will quickly disappear from the scene. Rebuttal will only delay the disappearance. It was VOTED to accept the communication as information. It was further VOTED to write another letter to Dean Rosenberg informing him that we agree with him that this book represented sloppy scholarship and inquire as to what is the procedure in the University when members of the faculty are guilty of such scholarship which causes embarrassment to the University. It was further VOTED that permission be obtained from Dean Rosenberg to publish his letter in *Connecticut Medicine*.

Life Members

It was VOTED to receive as information the following list of Life Members: Lajos A. Borsos, Bridgeport (F), Harvey Jacobson, New Haven (NH), Paul G. Kuehn, Hartford (H), William B. Lyons, Southbury (NH), Peter A. Rinaudo, Berlin (NH), Ignatius J. Vetter, Norwalk (F), Roland A. Mariani, New London (NH), H. Crane Huber, Jr., Waterbury (NH), Louis A. Coulson, New London (NL), Earle Herbert, Willimantic (W), Richard C. Manjoney, Orange (NH), Edward A. Scherr, New Haven (NH), Joseph D. Waxberg, Stamford (F).

CMMI-CMIC

Dr. Orphanos reported that a group of the board members attended the annual meeting of the Physicians Insurance Association of America. There was an opportunity to meet with the London brokers, who arranged a meeting with the underwriters and an indication was gathered of what is coming up in the future and that they were pleased with our operation. He reported that the new CMIC rates will probably be out by August 15. Dr. Orphanos further reported that the CMMI pension plan discussions are progressing and that actuaries and brokers have been meeting to bring the matter to conclusion. He suggested that the pension committee should be required to report to the Council on a yearly basis, instead of just having an insert in the annual report.

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on June 2, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

EMERGENCY MEDICINE

Seeking full time emergency physicians; 102-bed hospital/21,000 visits/year. BC or prepared in Emergency Medicine with General Surgery, Family Practice or Internal Medicine background preferred. Attractive compensation and benefits. Send CV and reference to Satya Agarwal, M.D., FACEP, Director, Emergency and Outpatient Services, Rockville General Hospital, 31 Union St., Rockville, CT 06066. (203) 872-0591.

FAMILY PRACTICE

Looking for a board certified or qualified family practitioner or general internist for a very active practice. Details available on demand. Write or call: A.G. Gosselin, M.D., 65 Brown Ave., Jewett City, CT 06351. Phone: (203) 376-4471.

Expanding family practice in western Connecticut seeking BC/BE family practitioner to join busy six physician group during summer of 1989. Highly desirable area. No obstetrics. Send CV to, Brookfield Health Associates, P.C., 940 Federal Rd., Brookfield, CT 06804.

BC/BE Family physician to join busy family practice; beautiful location utilizing a Yale affiliated hospital. Send CV to 10 Cross Rd., Brookfield, CT 06805.

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Internist, lower Fairfield county. Minimum two years experience. Share attractive office part-time or with small investment amalgamate adjacent space in developing professional building. Ideal for physician wishing to resume working part-time with goal of fulll-time group practice. Send CV to CSMS, c/o IM/FB.

Wanted: BC/BE internist to join established practitioner in beautiful northwestern Connecticut. Excellent professional opportunity and quality of life. Send CV with letter of interest to Dr. Richard Collins, P.O. Box 1168, Sharon, CT 06069.

Internist to join well-established 12 physician Internal Medicine Group in Central Connecticut, to practice general Internal Medicine. Substantial hospital and office patient population. Liberal salary and benefits. Send CV to Harold P. Kaplan, M.D., Internal Medicine Associates, P.C., 116 Cook Ave., Meriden, CT 06450.

Two busy pulmonolgists/internist/critical care specialists in Hartford suburb are seeking an associate/partner. Modern 200-bed community hospital; opportunity for university affiliation; competitive financial and benefit package; central Connecticut location. Candidate should be BC in internal medicine and BE/BC in pulmonology/critical care. Special qualifications negotiable. Please reply with CV to: PULMONARY ASSOCIATES OF BRISTOL, Suite D25, 25 Newell Rd., Bristol, CT 06010.

INTERNAL MEDICINE/FAMILY PRACTICE

Internal Medicine/Family Practice trained physicians BE/BC to join our nationally recognized physician group, now a primary affiliate of the largest and most rapidly expanding hospital in Connecticut. We are practicing aggressive primary clinical medicine in five offices surrounding the greater Hartford area. We have been chosen, and are participating in the IM/FP resident teaching programs for Hartford, St. Francis, University of Connecticut, and Mt. Sinai hospitals. Looking for strong clinicians who enjoy patient contact, and have the desire and ability to help this group design and implement new clinical programs in an expanding medical delivery system. If you are interested in further information, call Gregg Grinspan, M.D., Medical Director of Immediate Medical Care Center at (203) 721-7393 or (203) 232-4891 or send DV to 5 Hillcrest Avenue, Wethersfield, CT 06109.

MISCELLANEOUS

Physicians needed for part-time staffing of the Admission and Evaluation area of the Newington Veterans Administration Medical Center. Half-days or full-days, no night call. Call Dr. Terrence at (203) 666-6951, ext. 274 for more information, interviews.

NEUROLOGY

Neurologist needed for *consulting* services for adults with developmental disabilities. Services required include initial and ongoing assessments as needed, recommendations for treatment, and consultation with primary physicians. All patients are residing in group homes (ICF/MR) in greater New Haven area and require a MEDICAID approved provider for medical services. Please call Jill Jensen, Client Services Coordinator, 389-6956.

PEDIATRICS

BC/BE pediatrician to replace retiring member of a two-man practice in south central Connecticut. Competitive salary first year, followed by opportunity for partnership. Excellent cross-coverage. Preference given to university-trained U.S. medical school graduate. Please send CV to CSMS, c/o PED/AB.

Full or part time associate to join three person pediatric group in a New Haven suburb located five miles from Yale-New Haven Medical Center. Earnings will be 50% of gross income. Call 248-4846 any evening after 7 P.M.

PRIMARY CARE

Walk In Urgent Care. Physician wishing to participate as full time managing partner in a new walk in center. Write CSMS, c/o PC/WW.

Physician. July, 1988. Full time at small, prevention oriented Primary Care center. Beautiful Connecticut shoreline; two hours Boston or New York. Prefer BC/BE in Family Practice, Internal Medicine or Pediatrics. Expanded Health Services, 120 Broad St., New London, CT 06320.

Primary physician needed for ongoing services for adults with developmental disabilities. Services required include annual physicals, ongoing office visits as needed and referrals for special services. All patients are residing in group home (ICF/MR) in Greater New Haven area, and require a MEDICAID approved provider for medical services. Please call Jill Jensen, Client Services Coordinator, 389-6956.

RADIOLOGY

Diagnostic Radiologist. Rapidly growing six member hospital/office-based radiology group in central Connecticut seeks BC/BE new member to start by January, 1989. Applicant must have recent training in MRI, CT, Ultrasound, Nuclear Medicine, and Angiography/Interventional Radiology. Excellent salary and benefits. Send CV to CSMS, c/o RAD/DD.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

FAMILY PRACTICE

Dec. '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC-(Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

INTERNAL MEDICINE

Endocrinology. July '89. Age 29. Licensed in Connecticut. FLEX. AB cert. MD, University of Dominca School of Medicine, Portsmouth, Dominica. Int. and Res., Booth Memorial Medical Center, New York. Fellowship, Rhode Island Hospital of Brown University, Providence, RI. Prefers solo or institutional type practice in a medium to large-sized community. Strong desire to practice subspecialty only. Write, Michael D. Hein, M.D., 243 Atwells Ave., Providence, RI 02903.

Gastroenterology/Hepatology. July '89. Age 30. Nat'l bds. AB cert. MD, UHS/The Chicago Medical School, Chicago, IL; Int. and Res., Lenox Hill Hospital, New York, NY; Fellowship, Presbyterian University Hospital, Pittsburgh, PA. Experienced in all aspects of endoscopy. Prefers group or associate type practice. Write, David H. Berman, M.D., 351 South Highland Ave., Pittsburgh, PA 15206.

Gastroenterology. June '89. Age 31. Licensed in Connecticut. Nat'l bds. AB elig. MD, St. Louis University, St. Louis, MO; Int. and Res., University of Rochester, Rochester, NY; Fellowship, University of Connecticut, Farmington, CT. Prefers gastroenterology group or associate type practice in a medium-sized community. Write, Howard P. Fritz, M.D., 14 Baldwin Court, Newington, CT 06111.

Pulmonary. June '89. Age 42. Nat'l bds. AB cert. MD, Int. and Res., University of Virginia, Charlottesville, VA; Fellowship, University of Washington, Seattle, WA. Prefers group or associate type practice in a medium to large-sized community. Write, 10 East Third Street, Frederick, MD 21710.

UROLOGY

Immediately available. Age 49. Presently in practice. FLEX. AB cert. MD, Universidad Autonoma de Guadalajara; Int., C.M.D.N.J. Rutgers Division, Hackensac Hospital; Res., Hahnemann Medical College and Hospital, San Francisco, CA and West Virginia University Medical Center. Prefers solo, group or associate type practice in a medium to large-sized community. Write, Joseph G. Colonna, M.D., 503 Captain Dement Dr., Waldorf, MD 20603.

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Acute Adult Leukemia

The Danbury Hospital Experience

ANASTAS C. PROVATAS, M.D., JOHN PEZZIMENTI, M.D.,
ROBERT B. COOPER, M.D.

ABSTRACT—In recent years, progress has been made in the treatment of adult acute nonlymphocytic leukemia (ANLL). One of the major reasons for this has been the clinical use, in combination, of cytosine arabinoside (Ara-C) and anthracycline antibiotics. Studies utilizing this drug combination have shown overall complete remission rates of 55% to 70%. The median duration of remission has been 12 to 18 months. Only 24% of all patients with ANLL that are treated survive beyond two years, while as many as 33% of complete responders remain disease-free beyond two years. The purpose of this retrospective study was to review the Danbury Hospital experience in treating ANLL and to see if it compared favorably with other studies of treatment outcome as measured by remission rate, remission duration, and survival.

The charts of all patients (59 cases) in whom the diagnosis of ANLL was made during the period 1974 to 1987 were reviewed. Those 41 patients who were treated with chemotherapy during that period were entered into the study. By chart review or by contact with the patient's oncologist, follow-up was obtained on all patients through October, 1987. Fifty-three percent of all patients achieved complete remission. The median duration of remission in all complete responders was eight months. The median survival for all patients was eight months, while the median survival of those patients achieving remission was 16.8 months. The two-year survival rate of all patients was 17% while the rate of those having achieved remission was 32%.

These results indicate that Danbury Hospital, as a community hospital, compares favorably with major university centers in treating ANLL.

Introduction

OVER the last decade, significant progress has been made in the treatment of adult acute nonlymphocytic leukemia (ANLL). One of the major reasons for this has been the clinical use, in combination, of cytosine arabinoside (Ara-C) and anthracycline antibiotics.[1] Most studies utilizing this drug combination have shown overall complete remission rates of 55% to 70%; 60% to 75% for those patients less than 60 years of age, and 30% to 50% for patients older than 60 years of age.[2,3,4] The median duration of remission of complete responders has been shown to be 12 to 18 months.[1] Whereas 24% of all patients with ANLL that are treated survive beyond two years,[5] as many as 33% of complete responders remain disease-free beyond two years.[5] Similar results have also been seen with the addition of 6-thioguanine (6-TG) to Ara-C and daunorubicin, in combination.[6,7,8]

The purpose of this retrospective study was to review the Danbury Hospital experience in treating ANLL to see if it compared favorably with results from national cooperative groups and university centers in treatment outcome as measured by remission rate, remission duration, and survival.

Materials and Methods

The charts of all patients (59 cases) in whom the diagnosis of ANLL was made during the period 1974 to 1987 were reviewed. Those 41 patients who were treated with chemotherapy during that period were entered into the study. Follow-up was obtained on all patients through October 1987.

Ara-C, an anthracycline antibiotic, and 6-TG in combination were utilized as initial (induction) therapy in 22 patients. Eleven patients were treated with Ara-C and an anthracycline antibiotic. Three patients were treated with Ara-C and 6-TG. One patient was treated with Ara-C as a single agent. Four patients were treated with a variety of miscellaneous therapies (see Table 1). In addition, patients received consolidation and maintenance chemotherapy. Consolidation therapy is defined as a more intensive therapy which follows induction therapy and which is intended to reduce the residual leukemic burden that persists in most patients in complete remission. Maintenance therapy usually follows consolidation therapy and involves a reduction in the dose as well as a deletion of some of the drugs used in induction therapy. Of the 22 patients entering remission, 18 patients received

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consolidation and maintenance chemotherapeutic regimens, while four patients received consolidation chemotherapy alone. One patient underwent bone marrow transplantation. Of the 41 patients, 28 were diagnosed as having acute myelogenous leukemia (AML), seven acute myelomonocytic leukemia (AMML), four acute monocytic leukemia, and two acute promyelocytic leukemia.

Table 1
INITIAL CHEMOTHERAPY

Regimen	*Number of Patients*
Ara-C/anthracycline antibiotic/6TG	22
Ara-C/anthracycline antibiotic	11
Ara-C/6TG	3
Ara-C	1
Anthracycline antibiotic/prednisone	1
ACO[1]	1
PATOP[2]	1
AD-OAP[3]	1

[1] Adriamycin/cytoxan/vincristine
[2] Prednisone/Ara-C/6TG/vincristine/procarbizine
[3] Adriamycin/vincristine/Ara-C/prednisone

Complete remission was defined as an attainment of a bone marrow with normal erythropoesis, granulopoeisis, and thrombopoeisis, and 0-5% blast cells, a peripheral granulocyte count $>1500/mm^3$, platelet count $>100K/mm^3$, and a hemoglobin concentration >10 grams/dl (without transfusion), and the absence of circulating blast cells.

Results

A. *General Patient Characteristics*

Of the 41 patients, 21 were men and 20 were women. The mean age was 50 years. Twenty patients were less than or equal to 55 years of age, while 21 were above the age of 55 (see Table 2).

Table 2
GENERAL PATIENT CHARACTERISTICS

Patients	*Number*
Total	41
Male	21
Female	20
≤ 55 years old	20
>55 years old	21

B. *Treatment Outcome*

1. Remission

Fifty-three percent of all patients achieved complete remission. When subgroups were studied, the remission rate was noted to be 75% in those 55 and below, and 33.3% for those patients above the age of 55 (see Table 3).

Table 3
REMISSION

Patients	*Remission Rate*
Total	53%
≤ 55 years old	75%
>55 years old	33%

2. Remission Duration

Duration of remission in all complete responders is illustrated in Figure 1. The median duration of remission in all complete responders was eight months. The subgroups of patients aged 55 and below as well as those above the age of 55 had median durations of remission of eight months (see Table 4).

Table 4
REMISSION DURATION

Complete Responders	*Months (Median)*
≤ 55 years old	8
>55 years old	8

3. Survival

The overall survival in all 41 cases is shown in Figure 2. The median survival for all patients was eight months. Those patients 55 years old and younger exhibited a median survival time of 12.5 months while those older than 55 years old revealed a median survival time of only four months (see Table 5).

Table 5
SURVIVAL

Patients	*Months (Median)*
≤ 55 years old	12.5
>55 years old	4
Patients Achieving Remission	
≤ 55 years old	18
>55 years old	4

The median survival of those patients achieving remission was 16.8 months (see Figure 3). Those patients in the subgroups, 55 years old and younger, and older than 55, exhibited a median survival time of 18 and 14 months respectively (see Table 5). The two-year survival rate of all patients was 17% while the rate of those having achieved remission was 32%.

Of the 41 patients in the study, five were still alive at the end of the follow-up period with one patient with AML and one with AMML alive at 81 and 155 months respectively.

Discussion

We have described a series of 41 patients with ANLL treated with chemotherapy at Danbury Hospital. The remission rates were comparable to those reported in other large series. Our two-year survival rate compared favorably with those rates reported in other studies.

The median duration of remission of eight months in all complete responders was below the duration reported in other studies, but our two-year survival rate of 32% in those patients did compare favorably to the rates reported in these same studies[5].

Our remission rates as well as our two-year survival rates have been similar to those reported in other studies. ANLL remains a difficult disease to treat, necessitating that we continue to look for new ways to treat in an attempt to prolong survival in patients with this devastating illness.

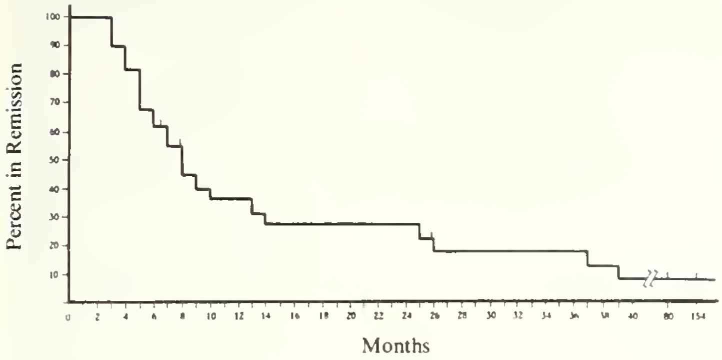

Figure 1

Remission Duration. Curves are plotted from the date of remission. Tic marks denote surviving patients.

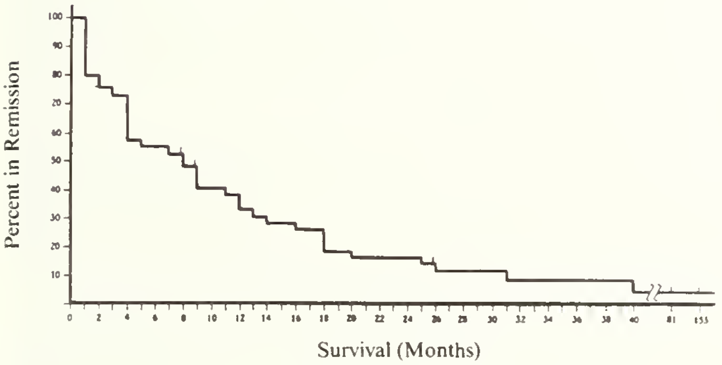

Figure 2

Overall Survival. Curves are plotted from the date of remission. Tic marks denote surviving patients.

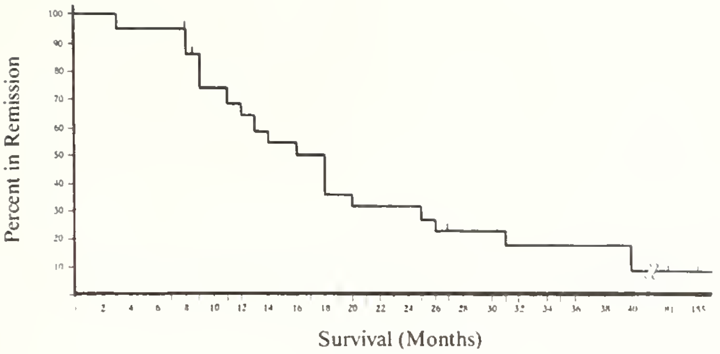

Figure 3

Survival of Those Achieving Remission. Curves are plotted from the date of remission. Tic marks denote surviving patients.

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Late Pericardial Tamponade Following Radiation Therapy for Bilateral Breast Carcinoma

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AND KENNETH V. SCHWARTZ, M.D.

ABSTRACT—We report a case of a patient who developed a chronic pericardial effusion which subsequently resulted in pericardial tamponade 12 years after her last radiation treatment for breast carcinoma. Chronic effusive pericardial disease is a rare complication following radiation therapy for breast carcinoma and is usually secondary to malignant spread. Pathological examination of pleural and pericardial tissue from our patient revealed extensive fibrosis and reactive mesothelial-cell proliferation but no signs of malignancy. These findings were consistent with radiation induced injury. Radiation induced effusive pericarditis following long-term radiation therapy for breast carcinoma is a diagnosis of exclusion and can be made only after an extensive workup to exclude primary cancerous spread of the original lesion.

Introduction

CHRONIC pericardial effusion is a rare complication following primary radiation therapy for breast carcinoma.[1,2] Pericardial disease following radiation therapy has been well documented in treatment of Hodgkin's disease because of radiation fields that expose the heart and pericardium.[3,4] Constrictive pericarditis is the most common type of pericarditis seen as a long-term side effect of radiation therapy.[5] In this paper we present a case of a 50-year-old female who developed a hemodynamically significant pericardial effusion 12 years after her last radiation treatment for carcinoma of the breast. An extensive workup was negative for recurrent malignancy.

Case Report

A 50-year-old white female was admitted to the hospital with a two-week history of increasing shortness of breath. The patient had undergone right mastectomy and bilateral oophorectomy in 1969 for breast carcinoma, followed by radiation therapy in which 2400 rads were delivered to the midline and 4400 rads were delivered to a separate right anterior supraclavicular and internal mammary field. In 1984 she had a left-breast carcinoma excised locally, followed by primary radiation therapy to the left chest in which she received 6000 rads to the left breast, supraclavicular, and axillary lymph node fields. In 1979 she developed a lymphangiosarcoma of the skin overlying her left breast and subsequently underwent a left mastectomy. An echocardiogram prior to surgery revealed a small-to-moderate-sized pericardial effusion. A follow-up bone scan and liver-spleen scan in 1983 revealed no metastatic lesions. The patient remained asymptomatic until shortly before this admission when she became extremely short of breath. Physical examination revealed a white female who looked her stated age and was in moderate distress. Her blood pressure was 130/86 mm Hg with a heart rate of 76 beats per minute. No pulsus paradoxus was detected; her neck veins were slightly distended. Breath sounds were diminished at the left base, as were the heart sounds; there was a moderate biphasic pericardial friction rub. The abdominal and pelvic examinations were unremarkable. Bilateral pitting edema was noted.

Hematologic and metabolic profiles were found to be within normal limits. RF and ANA were negative. Chest x-ray revealed a large left pleural effusion and a slightly enlarged heart (see Figure 1); the EKG showed low voltage and an incomplete right bundle branch block.

Thoracentesis performed on the day of admission revealed a transudate. Subsequent cultures and cytology were negative for bacterial growth and malignant cells. Echocardiogram (see Figure 2) on the day after admission showed a moderate-sized anterior and apical effusion without signs of cardiac tamponade.

On the third hospital day the patient developed a swollen right calf. A venogram showed a deep vein thrombosis below the knee; the lung scan was negative for pulmonary embolism. The patient was treated with warm soaks, bed rest, and a Greenfield filter was inserted. Anticoagulation was withheld because of the pericardial effusion. Repeat echocardiogram revealed a larger pericardial effusion and a pericardiocentesis was performed. Seven hundred cc of frankly bloody fluid was removed which had a protein content of 5.4 gm/dl and an LDH of 6143 IU/L. Cytology was negative for malignancy but was consistent with an inflammatory exudate. Cultures were negative.

Because of the suspicion of a malignant effusion an exploratory partial pericardiectomy was performed and the fluid was drained. Pathologic examination showed severely reactive pericardial and pleural disease without evidence of malignancy (see Figure 3). The post-operative

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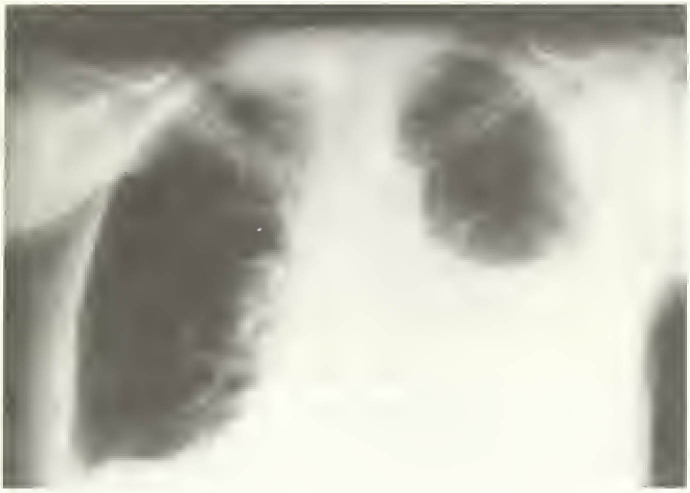

Figure 1

Admitting chest x-ray showing bilateral pleural effusions greater on the left side than on the right. In addition, the heart is slightly enlarged and bilateral mastectomy scars are noted.

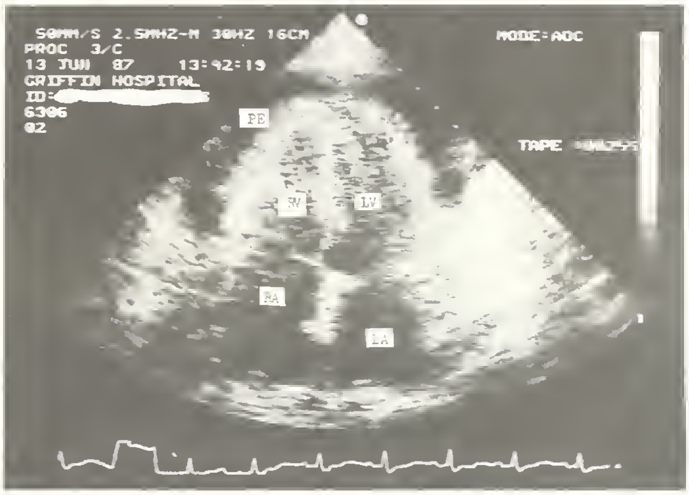

Figure 2

Echocardiograms obtained on the day after admission showing the heart in the apical four-chamber view. Left ventricle (LV), right ventricle (RV), left atrium (LA), and right atrium (RA), as labeled. A moderate pericardial effusion (PE) is well seen at the upper margin of the ventricles.

course was uneventful. Follow-up chest x-ray approximately one month after discharge (see Figure 4) demonstrated clearing of the left pleural effusion and normal heart size.

Discussion

Primary radiation therapy has been advocated as a reasonable therapy for locally advanced cancer because it offers good tumor control, few complications, and an option for salvage mastectomy. Major complications following this type of therapy include moderate or severe edema, brachial plexopathy, shoulder restriction, and chest wall discomfort.[2]

Radiation induced pericardial disease is well documented in the literature.[1-11] Effusions are most common following mediastinal radiation therapy for Hodgkin's disease.[3,4] Most cases of pericardial effusion after radiation therapy develop acutely.[11] Martin et al[11] estimated that 92% of effusions develop within 12 months of radiation therapy. Few cases of chronic pericardial effusions following radiation therapy for breast carcinoma have been reported.[3,10] The incidence of radiation-induced heart disease developing at any interval following radiation therapy for breast carcinoma is only 3.4%.[4] Constrictive pericarditis is by far the most common type of long-term side effect involving the heart following radiation therapy.[5] The effusive type of pericarditis seen in our patient is rarely described.

In order to avoid unnecessary chemotherapy, malignancy must be ruled out prior to making the diagnosis of radiation-induced pericardial effusion. Posner et al observed that in 31 patients who developed pericardial disease associated with a variety of carcinomas, 58% developed pericardial effusions secondary to their malignancies.[6] It was also noted that only 10% of the pericardial effusions were thought to be secondary to previous radiation therapy. In four patients who developed pericardial effusions and also had a history of radiation

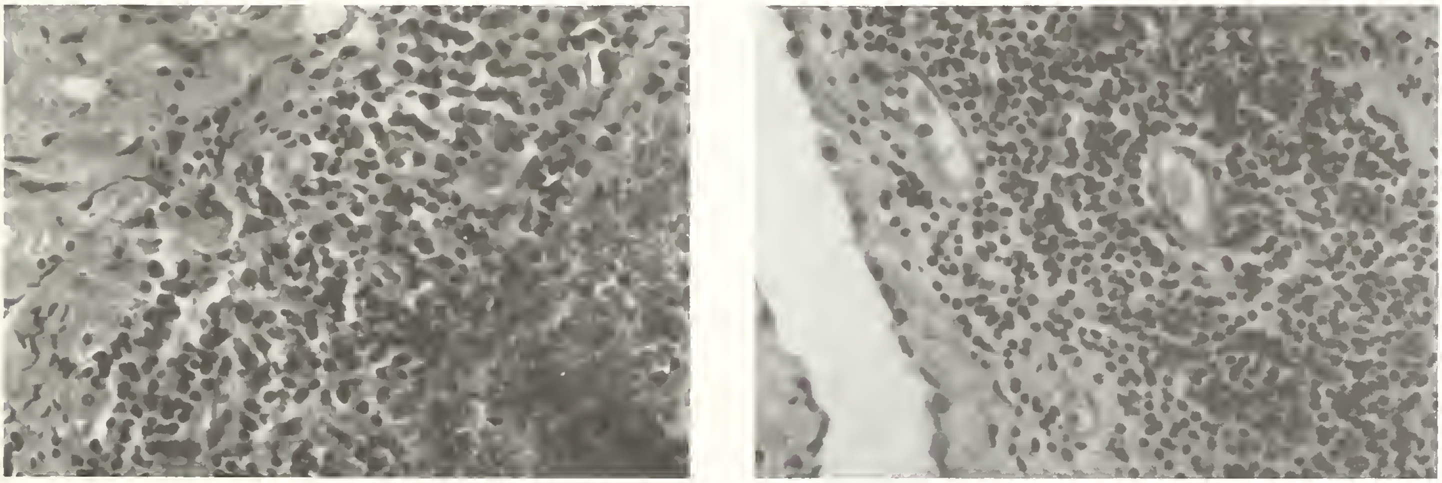

Figure 3

Microscopic view of pericardial and pleural tissue obtained during open drainage procedure.

Figure 3A (Pericardial tissue)

Pericardial tissue—The tissue is markedly thickened by dense fibrous tissue. There is fibrous exudate coating the surface of the pericardium. Within the pericardium and adjacent fatty tissue are lymphoid aggregates and evidence of chronic inflammation. There is reactive mesothelial cell proliferation. There is no sign of malignancy.

Figure 3B (Pleural tissue)

Pleural tissue—This section shows fibrosis, chronic inflammation, and some reactive mesothelial cells. No signs of malignancy.

therapy for breast carcinoma the effusions were demonstrated to be secondary to malignancy.

In summary, we have presented a case of a 50-year-old female who developed a significant pericardial effusion 19 years after mastectomy and radiation therapy and 12 years after a second course of radiation therapy for a carcinoma of the opposite breast. An extensive workup, including thoracotomy with pericardial and pleural tissue analysis, revealed no evidence of tumor metastasis although there had been a strong clinical suspicion. Late chronic effusive pericarditis is uncommon after radiation therapy for breast carcinoma and should be investigated diligently to exclude the presence of recurrent cancer.

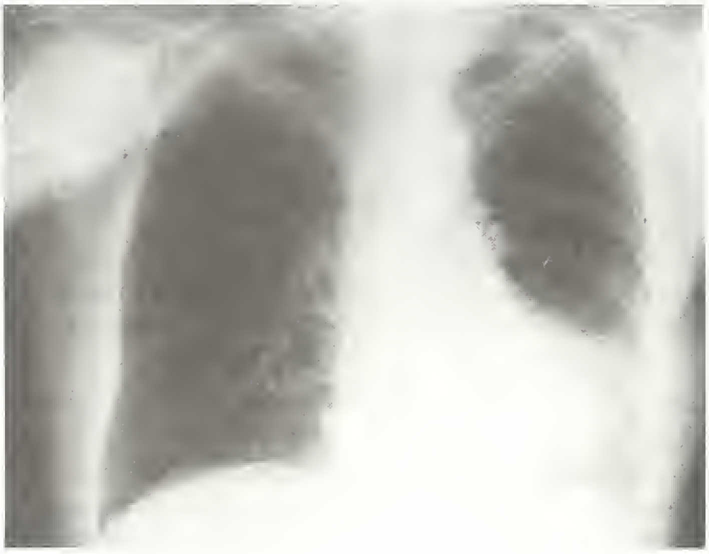

Figure 4

Chest x-ray obtained two months after discharge. Note the decrease in the left pleural effusion and heart size.

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Lost Guide Wires: A Case Report Showing a Complication of Central Vein Cannulation

GARY R. COLLIN, M.D. AND JOHN C. RUSSELL, M.D.

ABSTRACT—A case of a guide wire lost during an attempted right subclavian vein cannulation is described and the literature reviewed. The complication rate associated with central vein cannulation ranges from 0.4% to 11.1%. While most complications are minor, fatalities do occur, thus necessitating the swift removal of catheter emboli. Fluoroscopy and angiography have allowed removal of these objects without a surgical operation. In the case presented here, a guide wire was found to transverse the superior vena cava, right atrium, and inferior vena cava, and it was removed transluminally using a wire snare placed through an introducer in the femoral vein.

Introduction

CENTRAL venipuncture as a venous access route has been used for over 25 years. Indications for central venous access have expanded rapidly over these years: rapid administration of fluids, hyperalimentation, monitoring of central venous pressure, lack of adequate peripheral veins, and insertion of a pacemaker.[1] Along with increasing use of central venous catheters has come an expanding variety of complications.

We report here one such complication, that of a retained guide wire during subclavian vein cannulation, and the nonoperative resolution of the problem.

Case Report

A 68-year-old male was admitted to the medical service with complaints of weight loss, dysphagia, and persistent vomiting. He had had multiple admissions in the past for similar symptoms, and numerous tests, including CT scans and multiple endoscopies with biopsies, failed to disclose a diagnosis. Physical examination at the time of this admission was notable for the patient's cachexia; he was six feet tall and weighed 98 pounds. No masses were palpable in the abdomen, and rectal examination showed guaiac-negative stool.

The patient was admitted for repeat endoscopy as well as for hydration and nutrition. Placement of a single lumen central line was attempted by the medical intern via a right subclavian approach using the Seldinger technique. However, as the catheter was passed over the wire, the wire was lost under the skin. The surgeons were consulted, and because the wire could not be felt, x-ray films were obtained. They showed the wire to begin in the superior vena cava, to continue through the right atrium and out into the inferior vena cava, and to end in the region of the groin (Figures 1 and 2). The patient had no symptoms at this or during subsequent times, and cardiac monitoring showed no ectopic activity.

An introducer was placed into the right femoral vein, and a wire snare was inserted through the introducer and under fluoroscopy was seen to grasp the J-loop of the wire. The wire was then removed through the introducer. The patient had no complications from the procedure and had no late sequelae from the incident.

Subsequent workup of the patient included biopsies of the stomach that revealed a mucin-secreting adenocarcinoma of the stomach. The patient and his family refused surgical treatment or palliation. He died approximately three months after this admission.

Discussion

The complication rate associated with central vein cannulation ranges from 0.4% to 11.1%.[2] Many fatal complications have occurred, including pneumothorax, hemothorax, hydromediastinum, hydropericardium, sep-

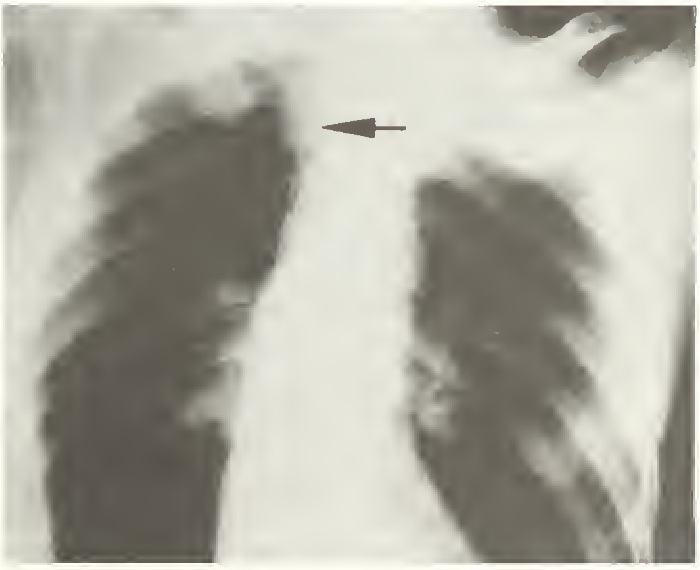

Figure 1
The proximal tip of the wire (black arrow) is located in the superior vena cava.

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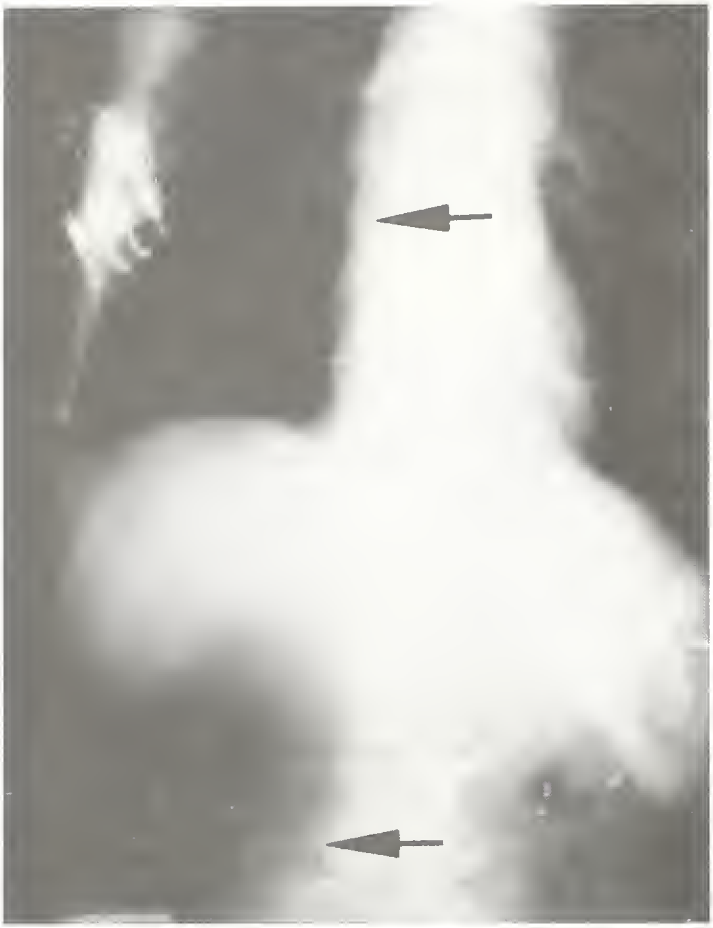

Figure 2
The wire is seen to travel through the heart into the inferior vena cava (black arrows).

ticemia, arrythmia, pulmonary embolus, air embolus, and catheter embolus. Most complications, however, are relatively minor (small pneumothorax, subclavian or carotid artery puncture, hematoma, improper positioning).[3] Because of the increasing use of central venous lines, a growing body of literature concerning new and unusual complications has appeared. Some of these complications are: "wandering" catheter (shifting between superior vena cava and internal jugular vein), lymph leakage, mediastinal emphysema, heart perforation, loop formation of guide wire preventing removal, and superior vena cava syndrome.[4-9]

The estimated incidence of catheter embolization in the venous circulation, taking into account all types of cannulation (angiography, catheterization, monitoring, cardiac pacing), is 0.1%.[10] The usual way the embolus occurs is by the shearing off of the tip of the catheter by traction on the beveled tip of the insertion needle. With the advent of the guide wire, whereby the needle is removed over the wire and replaced by the catheter passed over the wire, this problem is eliminated. A new complication arises, however, since the wire is not a fixed piece of equipment. The wire can be accidentally passed into the vein being cannulated. In the case reported here, the junior medical house officer inadvertently pushed the wire into the vein as the catheter was being passed into the vein.

The need to remove foreign bodies is recognized because of the hazards of thrombus, sepsis, perforation, arrhythmia, more distal embolization (especially into the pulmonary artery), and death.[1,11-13] In a review of the literature by Bernhardt et al in 1970,[14] 17 of 28 patients who had catheter debris left in their vessels died of complications associated with the catheterization. The 34 patients from whom the catheters were removed all survived.

The standard treatment in the early 1960s was surgical removal via thoracotomy or celiotomy. During the 1960s, however, techniques were developed to remove the foreign bodies without operation. A variety of instruments were developed that could be inserted into the vasculature to remove the debris. These instruments include hooked catheters, wire loops, stone baskets, Fogarty balloons, endoscopic forceps, and myocardial biopsy catheter devices.[3,10,11,15,16] The technique in each instance is basically the same: under fluoroscopy, the instrument is inserted into the vessel and manipulated to the area of the foreign body. The foreign body is then grasped with or hooked by the instrument and removed through the insertion site. Angiography is often used to make sure that the debris is indeed intraluminal, as there are many reported cases of catheters and wires placed into the tissue surrounding the vessel.[15,17] The transluminal approach in these cases is not effective.

This approach to catheter removal has its own complications, although they are considered to be rare and minor. The most dangerous complication seen in this review of the literature was that of a case of ventricular tachycardia requiring defibrillation which occurred during attempted removal of an intercath in the main pulmonary artery via a femoral approach.[15]

Central vein cannulation has become commonplace in modern medicine because of its many important applications. With expansion of its uses has come the appearance of an increasing variety of complications. Of course, the best way to eliminate complications is by prevention: weighing the advantages and disadvantages of insertion; using only hospital personnel experienced in the techniques of insertion; and taking care to maintain control of needles, wires, and catheters during insertion.[5] When catheters do become embolized, or wires lost, x-ray films should be obtained to localize the foreign body. Angiography should be performed to make certain that the object is within the vessel lumen. Then one of the various instruments can be inserted into the vessel, usually the femoral vein, to remove the object transluminally.

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June 1938

NOTED LECTURER AT CLINICAL CONGRESS

Dr. Philip Manson-Bahr of the London School of Tropical Medicine has consented to be present and take part in the round-table discussion on Chronic Ulcerative Colitis to be held on the afternoon of September 22nd during the Clinical Congress in New Haven. Dr. Manson-Bahr is Senior Physician to the Hospital for Tropical Diseases and Director of Clinical Tropical Medicine in the London School of Hygiene and Tropical Medicine. The Clinical Congress is highly honored and particularly fortunate at this time because Professor Manson-Bahr is one of the most outstanding men in the field of tropical medicine. Not only is he the son-in-law of the late Sir Patrick Manson who may be considered the "father" of tropical medicine in England, but one of the pioneers of research especially in the field of the dysenteries. He was one of the earliest to recognize and call attention to the fact that a differential diagnosis between amebic and bacillary dysentery could be made by microscopic examination of the bowel discharges in cases of diarrhea. This work which was first done in 1912 does not only still stand, but has recently been confirmed and extended. Dr. Manson-Bahr has made many other outstanding contributions to tropical medicine but one of his most outstanding is his editorship of Manson's Tropical Diseases which is considered throughout the world as the leading text and reference work in the field. Dr. Manson-Bahr is without equal as a lecturer, and his coming brings to our rostrum the world's leading authority on amebic and bacillary dysentery.

Dr. Manson-Bahr arrived on the Queen Mary on August 8th and will be in this country until the end of September. During that time he is to give the Mayo Clinic Lecture at Rochester, Minnesota, the Theobold Smith-Walter Reed Lecture at Washington, D.C., and the lecture of the evening in connection with the symposium on Chronic Ulcerative Colitis which is being presented by the New York Post-Graduate Medical School and Hospital on September 23. In addition, he is to be the guest of honor at Tulane University in New Orleans, Johns Hopkins University, Baltimore, and Harvard Medical School. We welcome Dr. Philip Manson-Bahr to the Connecticut State Clinical Congress at New Haven.

Prevent the event

Artist's depiction of red blood cells and platelets

PLATELET ADHESION INHIBITOR

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(dipyridamole) Tablets of 25, 50 and 75 mg

Prevents thromboembolic events when used in combination with coumarin anticoagulants in cardiac valve replacement

Brief Summary of Prescribing Information

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Precautions: *General:* Persantine® (dipyridamole USP) should be used with caution in patients with hypotension since it can produce peripheral vasodilation.

Carcinogenesis, Mutagenesis, Impairment of Fertility. In a 111 week oral study in mice and in a 128-142 week oral study in rats, Persantine produced no carcinogenic effects at doses of 8, 25 and 75 mg/kg (1, 3.1 and 9.4 times the maximum recommended daily human dose). Mutagenicity testing with Persantine was negative. Reproduction studies with Persantine revealed no evidence of impaired fertility.

Teratogenic Effects: *Pregnancy Category B.* Reproduction studies have been performed in mice, rats and rabbits at doses up to 125 mg/kg (15.6 times the maximum recommended daily human dose) and have revealed no evidence of impaired fertility or harm to the fetus due to Persantine. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers: As dipyridamole is excreted in human milk, caution should be exercised when Persantine is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children below the age of 12 years has not been established.

Adverse Reactions: Adverse reactions at therapeutic doses are usually minimal and transient. On long-term use of Persantine® (dipyridamole USP) initial side effects usually disappear. The following reactions were reported in two heart valve replacement trials comparing Persantine and warfarin therapy to either warfarin alone or warfarin and placebo.

	Persantine/ Warfarin (N = 147)	**Placebo/ Warfarin** (N = 170)
Dizziness	13.6%	8.2%
Abdominal distress	6.1%	3.5%
Headache	2.3%	0.0
Rash	2.3%	1.1%

Other reactions from uncontrolled studies include diarrhea, vomiting, flushing and pruritus. In addition, angina pectoris has been reported rarely. On those uncommon occasions when adverse reactions have been persistent or intolerable, they have ceased on withdrawal of the medication.

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How Supplied: Persantine® (dipyridamole USP) is available as round, orange, sugar-coated tablets of 25 mg, 50 mg and 75 mg coded BI/17, BI/18 and BI/19 respectively. They are available in:

25 mg: Bottles of 100; Bottles of 1000; Unit Dose Packages of 100

50 mg: Bottles of 100; Bottles of 1000; Unit Dose Packages of 100

75 mg: Bottles of 100; Bottles of 500; Unit Dose Packages of 100

Consult package insert before prescribing.

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Ridgefield, CT 06877

Important Advances in Clinical Medicine

Anesthesiology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in anesthesiology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in anesthesiology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Anesthesiology of the California Medical Association and the summaries were prepared under its direction.

Regional Anesthesia in Children

REGIONAL anesthesia has been used in children since the early 20th century but with little application by most anesthesiologists. In the past five years interest in the pediatric use of regional anesthesia has increased, paralleling the trend toward that of local and regional anesthesia in adults, the heightened awareness of the need to provide more reliable and effective postoperative analgesia, the availability of long-acting drugs for local anesthesia, and of the spinal administration of narcotics.

Relieving postoperative pain is the most common indication for using regional anesthesia in children. Effective pain relief by regional blockade reduces the risk of wound bleeding or dislodgment of dressings or drains postoperatively, and allows a body part to be immobilized after delicate reconstructive operations. Postoperative narcotic requirements are reduced or eliminated, with an attendant reduction of risk, side effects, and demands on nursing time. Patient and parent satisfaction is high, and psychologic trauma is reduced.

Regional anesthesia is frequently used in combination with light levels of general anesthesia. This combination results in excellent operating conditions without the use of neuromuscular relaxants and reduces the requirement for the general anesthetic agent. This technique is particularly suited to patients with altered pharmacokinetics due to hepatic dysfunction or renal failure. A rapid return of consciousness and recovery of airway reflexes are assured.

Using regional anesthesia may elminate the need for general anesthesia, particularly for peripheral procedures. For example, a child with a myopathy or malignant hyperthermia is an ideal candidate for regional anesthesia combined with light, intravenously, administered sedation for procedures such as muscle biopsy.

Regional blocks may be divided into two broad groups—central and peripheral. Central blocks include caudal, lumbar or thoracic epidural, and subarachnoid blocks (spinal anesthesia). Peripheral blocks include brachial plexus, ilioinguinal or iliohypogastric nerve, femoral nerve, and sciatic nerve blocks. Any of these may be done in children.

The most common regional technique used in pediatric anesthesia is the sacral epidural or caudal block. Experience has shown it to be an easy and reliable method with proven efficacy and safety. Lumbar epidural anesthesia is used routinely in many European and Australian centers, but more widespread acceptance in this country awaits the availability of pediatric-sized epidural needles, which are commercially available abroad. Bupivacaine hydrochloride is usually chosen for caudal or lumbar epidural anesthesia. A total dose of 2 to 3 mg per kg of body weight (1 ml per kg of a 0.25% solution) reliably provides analgesia to midthoracic dermatomes and motor blockade of varying intensity, with a duration of four to eight hours. While this is a rather large dose compared with what would be administered to an adult, peak bupivacaine plasma levels remain well below the toxic threshold when the total dose is 3 mg per kg.

The epidural use of morphine has been evaluated in children and has been shown to effectively provide prolonged analgesia. The risk of delayed respiratory depres-

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sion exists in children as in adults and mandates a careful monitoring of children following epidural narcotic administration. We recommend a 24-hour period of observation and monitoring following each dose. The effective dose of epidural morphine is 0.033 to 0.1 mg per kg.

A subarachnoid block with tetracaine may be used for inguinal herniorrhaphy or a similar procedure in newborn infants. A subarachnoid block may be established in an awake infant using only local anesthesia, and often there is no additional need for drugs that depress the central nervous system. Spinal anesthesia using tetracaine and epinephrine has a shorter duration—100 minutes—in newborns compared with adults. Hypotension rarely occurs in children after establishing a central regional block, even without prior volume loading with intravenous fluids.

Peripheral nerve blocks are best done during deep sedation or general anesthesia in children. They have the advantage of providing a more localized area of anesthesia with smaller doses of drugs, but they have a higher failure rate and carry a small risk of needle trauma to neurovascular structures. These disadvantages may be minimized during brachial plexus or sciatic nerve blocks with the use of an electrical nerve stimulator to aid in localizing the target nerve bundle. As is the case for epidural blocks, therapeutic doses of bupivacaine—2 to 3 mg per kg—result in safe plasma drug concentrations following either femoral nerve or brachial plexus block in children; the plasma concentrations are less than would be expected were the same dose given to an adult.

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Continuous Noninvasive Arterial Monitoring

NONINVASIVE, real-time, beat-to-beat arterial blood pressure measurement has recently become available through new monitoring technology. It is now possible to measure the finger arterial blood pressure continuously with a finger cuff without using any type of cannula or invasive device. This technique uses photoplethysmography and was first described in 1973 by Penaz. Currently, the only commercially available unit for noninvasively monitoring finger arterial blood pressure is the Finapres (*fin*ger-*a*rterial-*pres*sure) by Ohmeda. This monitor has been extensively tested for accuracy and reliability in a variety of clinical situations. The Finapres monitor provides a waveform resembling the pressure waveform achieved through radial artery cannulation. This device also provides digital readouts on systolic, mean, and diastolic blood pressures and the pulse rate. Although the Penaz method does not replace an arterial line in all situations, it does not carry the documented risks of arterial cannulation such as thrombosis, embolization, infection, or nerve injury. Neuropraxia has also been theorized as a potential complication of this monitor because it uses a finger cuff that impedes venous return; no complications have been seen in clinical experience with more than 1,000 patients, however. This type of monitoring may be useful in the surgery suite during anesthesia and in critical care areas, especially when few or no arterial blood specimens need to be drawn.

The Penaz method uses a small, specially designed finger cuff containing an infrared light source and photocell detector to determine the blood volume of the finger by detecting absorbency at a wavelength specific for hemoglobin. Changes in hemoglobin saturation do not affect blood pressure readings. This photoplethysmographic unit is linked to an electropneumatic transducer and a fast-reacting servosystem that includes a computer microprocessor to analyze arterial waveforms. An elegant feedback loop connects the components. Adjustments are made almost instantaneously with changes in blood pressure—and thus finger blood volume—and are relayed to the monitor and displayed as the arterial pressure waveform. Recalibration occurs once a minute to identify and correct for alterations in vascular smooth muscle tone.

In a clinical trial comparing two Ohmeda prototypes with intraarterial monitoring, pressure changes were accurately and linearly reproduced over a wide range of mean arterial pressures from 2 to 164 mm of mercury (0.27 to 21.81 kilopascals). These prototypes functioned well most of the time, and accuracy was good. When the monitors did not function, the machines showed an error message. There were no falsely normal or high readings when blood pressures were low. High and low blood pressures were measured with equal accuracy. It has also been reported that noninvasive arterial measurements are typically lower than those seen with a radial artery catheter. The person's hand should be at heart level for greatest accuracy, as with arterial pressure transducers. Readings from the thumb using a special blood pressure cuff may be more reliable because the thumb is closer to the radial artery.

Blood pressure measurements by the Penaz method may be inaccurate due to technical problems or physiologic abnormalities produced by drugs, neurohumoral factors, temperature, and local factors such as vascular disease and anatomic abnormalities. This device, however, has been found to work well in most patients with peripheral vascular disease, during peripheral vasoconstriction, and during open-heart procedures under hypothermic conditions on cardiopulmonary bypass. The device alerts practitioners to incorrect readings by emitting an error signal in most cases.

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Anesthesia for Preterm Neonates

IN a letter to the magazine *Birth* (June 1986), a mother complained that her preterm child had been subjected to a surgical procedure without anesthesia. As a result, a storm of protests occurred in the lay and medical media. This review presents the current status of anesthesia for preterm neonates.

In the past decade, the survival of premature infants has increased tremendously, especially of those weighing less than 1,000 grams. A large number of these surviving babies have undergone operations under paralysis with either inadequate or no anesthesia.

These babies are usually ill, severely fluid restricted, and possibly receiving potent diuretics. In the early 1970s, as these babies were being saved, monitoring techniques were rudimentary. Halothane was the principal agent, and bradycardia, hypotension, and intraoperative deaths were common. The rationale for "relaxant anesthesia" was that due to immaturity of the nervous system, these infants neither feel nor remember pain. It was widely believed that these babies do not need anesthesia and, in fact, they may not tolerate general anesthesia.

Recent work has shown that as early as the 13th to 20th weeks, there is evidence of the anatomic requirements for pain perception. Evoked potentials and cerebral glucose metabolism offer evidence of functional maturity. Responses such as changes in pulse and blood pressure, crying, and grimacing have been quantified for circumcisions done without anesthesia. Spectrographic properties of crying associated with pain have been identified. Preterm babies anesthetized with the use of nitrous oxide and curare had a greater stress response to a surgical procedure than babies receiving nitrous oxide, curare, and fentanyl. Finally, evidence has been presented of possible short- and long-term memories of pain.

With new monitoring and anesthetic techniques, most preterm neonates can be safely anesthetized. Techniques reported include the use of medium to high doses of the narcotic fentanyl, the inhalational agent isoflurane, or regional anesthesia.

Anesthesiologists today agree that general or regional anesthesia should be considered for all neonates undergoing an operation. On occasion, physiologic instability may demand that the doses of anesthetic agents be reduced or their use discontinued. This decision should not be based solely on an infant's age or perceived degree of maturity.

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Malignant Hyperthermia—Update

MALIGNANT hyperthermia is an acute hypermetabolic syndrome that can progress within 30 minutes to a premorbid state in which the arterial pH is as low as 6.6 units and the temperature is above 42° C (108° F). Until recently, malignant hyperthermia was among the leading causes of anesthetic death, with mortality above 65%.

The incidence of malignant hyperthermic crises is about 1 per 14,000 anesthetics, but the population at risk may be as high as 1 per 200. The syndrome is multigenetic, with variable expressivity and incomplete penetrance. The only well-documented triggering agents in humans are succinylcholine chloride and the potent inhalation anesthetics.

About 1% of children induced with halothane and succinylcholine will display masseter spasm, and half of those children are susceptible to malignant hyperthermia. The first symptoms of a crisis presenting during anesthesia are hypercarbia, sinus tachycardia, and tachypnea. Next, skin becomes mottled with cyanotic areas and patches of bright red flushing, after which generalized, rigor mortis-like skeletal muscle rigidity may occur. Fever is a late sign.

Triggering of susceptible muscle takes place during excitation-contraction coupling. Once susceptible muscle has been triggered, a contraction is maintained by an abnormally increased phospholipase A_2 activity, which causes an increase in mitochondrial free fatty acid content and stimulates calcium release. In the presence of free fatty acid, sarcoplasmic reticulum calcium release is increased and reuptake is inhibited. The resulting high sarcoplasmic calcium concentration allows actin and myosin fibers to interact. In late stages, when the muscle temperature rises above 43.5° C (110° F), actin-myosin binding is no longer calcium-dependent and the muscle contraction becomes an irreversible contracture.

Treatment should include discontinuing the use of the triggering drugs, hyperventilating the patient with 100% oxygen, and administering 2.5 mg per kg of body weight of dantrolene sodium intravenously as quickly as possible. Additional doses of 2.5 mg per kg should be administered intravenously, to a maximum of 10 mg per kg until symptoms resolve.

Dantrolene inhibits excitation-contraction coupling, but its major action appears to be on the sarcoplasmic reticulum. It increases the contraction activation threshold voltage in susceptible and normal muscle and prevents the depolarization of susceptible muscle by halothane.

The in vitro caffeine-halothane contraction test is the only widely accepted test for malignant hyperthermia. The diagnosis is established by evaluating a fresh, intact muscle segment for contraction in response to halothane and caffeine, which have little effect on normal muscle.

Elective surgical procedures are not contraindicated in patients known to be susceptible. Any type of conduction anesthesia, using any type of anesthetic for local effects (including amides) is acceptable. General anesthesia can be safely administered using a balanced technique combining nitrous oxide and narcotics augmented by nondepolarizing muscle relaxants. Other safe drugs include barbiturates, benzodiazepines, and ketamine hydrochloride. Some physicians preoperatively administer intravenous dantrolene as a prophylactic measure, while others believe it unnecessary. The Malignant Hyperthermia Association of the United States (PO Box 3231, Darien, CT 06820, [203] 655-3007) maintains a 24-hour physician referral service.

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Perioperative Myocardial Infarction

OF the 20 million patients presenting each year for anesthesia and surgical treatment in the United States, about 1 million have documented coronary artery disease, 2 million have two or more major risk factors for coronary artery disease, and 6 million are older than 65 years. Despite numerous advances in monitoring and therapeutic techniques, the incidence of perioperative myocardial infarction in patients undergoing noncardiac operations remains high: 6% in patients with a previous infarction, 10% in patients undergoing major vascular surgical intervention, and 37% in patients with a recent infarction. In 1983 it was suggested that the reinfarction rate was lower using invasive intraoperative monitoring (2% versus 6%) and prolonged intensive care unit stay (6% versus 37%). These results, however, have not been independently confirmed over the past five years.

Over the next decade, the challenge will be to lower perioperative cardiac morbidity. The solution is to rigorously identify the predictors of morbidity and, once identified, attempt to therapeutically alter them. Unfortunately, there are only a few thorough outcome studies of perioperative cardiac morbidity, and only a limited number of predictors are known. The established preoperative predictors are a recent—less than six months—myocardial infarction, current congestive heart failure, and, perhaps, instability of the anginal pattern. Such predictors as age, hypertension, diabetes mellitus, and stable angina remain controversial. The use of specialized preoperative testing remains controversial as well, although dipyridamole-thallium imaging has shown recent promise. Intraoperative tachycardia and hypotension are important predictors of outcome. In addition, it has been recently suggested that intraoperative myocardial ischemia may be an important predictor, but these studies were done in patients undergoing a coronary bypass operation, making interpretation difficult. Major body cavity operations and emergency surgical interventions also appear to place patients at higher risk, but neither the type nor the duration of anesthesia appears to play a significant role. Other advances include the finding that electrocardiographic ST abnormalities are best detected in leads V_5 (75%), V_4 (additional 15%), and II (additional 6%). Until this year, little was known of the postoperative risk factors. Recently a significant incidence of postoperative myocardial ischemia was shown compared with either intraoperative or preoperative ischemia. In addition, high heart rates were found during this particular period, which might play a causal role with respect to the ischemic pattern. Thus, the detection and aggressive treatment of both tachycardia and ischemia occurring in the postoperative period may play an important role in reducing the incidence of perioperative myocardial infarction.

In conclusion, this disorder remains a significant problem in the United States; only a few predictors from the preoperative, intraoperative, and postoperative periods have been identified, however. The challenge we face in the 1980s and 1990s is similar to that faced by coronary artery disease investigators in the 1950s. Only when predictors of coronary artery disease were identified (by studies like that in Framingham, Massachusetts) could rational approaches to prevention and treatment be devised and morbidity therefore reduced. This approach must be applied to the study of perioperative cardiac morbidity if significant advances in clinical care are to be made.

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Perianesthetic Temperature Regulation and Postoperative Tremor

ANESTHETIZED patients are generally thought to be poikilothermic, which results in hypothermia during exposure to cold operating rooms. Following a surgical procedure, anesthetic concentrations in the brain decrease rapidly and normal thermoregulatory responses to cold are expected. Thus, conventional theories of thermoregulation predict that after an operation, a patient with hypothermia will feel cold and compensate with peripheral vasoconstriction and shivering. Recent evidence suggests that thermoregulatory responses to cold do occur during anesthesia and that postoperative "shivering" is not generally thermoregulatory.

Intraoperative temperatures usually decrease for one to three hours and then change little for the duration of an operation. Thermal steady state occurs when metabolic heat production equals environmental heat loss; this can occur passively (no specific regulation) or from active thermoregulation (vasoconstriction and nonshivering thermogenesis). Patients undergoing short operations who remain relatively warm—35° C (95° F) or higher—achieve thermal steady state from a passive interaction with the environment. Patients undergoing lengthy operations who become hypothermic—about 34.5° C (94° F)—display profound peripheral vasoconstriction; those who are kept normothermic do not. Thus, vasoconstriction in such hypothermic patients is a direct response to intraoperative hypothermia. Once vasoconstriction occurs, core temperatures do not usually decrease further because vasoconstriction limits heat loss to the environment.

Body temperature is normally controlled by the hypothalamus, which responds to thermal input from every part of the body. This regulatory system is frequently modeled as a "setpoint" because the threshold temperatures that activate responses to hypothermia and to hyperthermia differ by only about 0.1° C. Thermoregulatory vasoconstriction, however, does not occur intraoperatively until core temperatures are about 2.5° C (5° F) below normal, indicating that the threshold temperature causing activation of regulatory responses to hypothermia is substantially decreased. It is unlikely that the hyperthermic threshold temperature decreases similarly because normothermic patients do not sweat, as would be expected were their core temperatures 2.5° C above the hyperthermic response threshold. It is also unlikely that the hyperthermic threshold remains unchanged, as anesthetized animals and humans become hyperthermic in warm environments. Most probably, anesthetics increase the hyperthermic threshold, resulting in a wide temperature range over which thermoregulatory responses are absent.

Postoperative tremor is commonly attributed to normal thermoregulatory shivering in response to intraoperative hypothermia. Postoperative "shivering," however, frequently does not occur in hypothermic patients, and, when it does, it is rarely associated with vasoconstriction, although vasoconstriction is a universal feature of thermoregulatory shivering. Moreover, shivering frequently occurs in normothermic patients after an operation, a finding difficult to reconcile with conventional theories of thermoregulation.

The electromyographic patterns of postoperative tremor do not resemble normal thermoregulatory shivering. One pattern is a regular, bursting, 5- to 7-Hz activity that is identical to both pathologic clonus and clonus produced by plantar flexion during recovery. The second pattern is tonic, but differs from shivering because it does not occur in all muscles simultaneously; does not show the typical, slow four-to-six-cycles-per-minute waxing and waning pattern; and has a strong 5- to 7-Hz underlying driving activity.

Postoperative tremor also does not correlate with core temperature, as would be expected if the tremor were thermoregulatory. Instead, its clonic pattern is highly correlated with end-tidal isoflurane concentration. Clonus generally occurs when descending cortical control does not inhibit spinal cord reflexes. During anesthesia, it is probable that spinal cord function returns before effective descending cortical control is reestablished. (The brain is "asleep" and the spinal cord is "awake," producing a functional spinal cord transection.) These results suggest that inadequate descending control of spinal reflexes, not thermoregulatory shivering, is the cause of postoperative tremor.

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Postretrobulbar Apnea Syndrome

THE retrobulbar administration of anesthetics is an effective method of achieving regional anesthesia and akinesia for many types of eye operations. Ocular complications are unusual but include retrobulbar hemorrhage, central retinal artery occlusion, and perforation of the globe or optic nerve. The retrobulbar administration of local anesthesia has also been associated with episodes of apnea, on occasion progressing to cardiopulmonary arrest.

Possible explanations of respiratory arrest following retrobulbar block include oversedation, intravascular injection (intravenous or retrograde arterial), subdural injection, or an idiosyncratic drug reaction. Opinion is varied as to which mechanism is responsible. One of the first cases reported was of a patient who suffered an immediate cardiopulmonary arrest after the retrobulbar administration of 2 ml of a 1:1 mixture of 0.5% bupivacaine hydrochloride and 2% mepivacaine hydrochloride. The reaction was explained as an intravascular injection into the ophthalmic artery that traveled in a retrograde fashion to the internal carotid artery and then progressed antegrade to the midbrain structures, resulting in respiratory arrest.

Another four cases of apnea following retrobulbar block have been reported and the possibility suggested that an injection into the optic nerve allowed direct access to midbrain structures. It has been shown radiographically that a retrobulbar injection into the dural sheath of the optic nerve results in diffusion of contrast material into the subarachnoid space surrounding the pons and midbrain. If anesthetics were similarly injected, they could bathe the respiratory centers, resulting in brain-stem anesthesia and subsequent apnea.

Respiratory arrest following retrobulbar placement of an anesthetic is a potentially life-threatening problem. Experimental evidence exists supporting two independent mechanisms: intravascular injection or injection into the optic nerve sheath. Regardless of the pathway, cardiac and neurologic sequelae can be avoided if appropriate management of the airway is initiated and proper ventilatory support is maintained. Patients having eye operations under regional anesthesia must be adequately monitored after a retrobulbar injection. Emergency equipment and personnel trained in cardiopulmonary resuscitation should be readily available.

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New Methods of Measuring Respiratory and Anesthetic Gases

RECENT developments in measuring respiratory and anesthetic gases promise to improve the safety and efficacy in monitoring patients undergoing anesthesia. These developments constitute both improvements in current equipment and the availability of new ways of measurement.

Why is measuring respiratory and anesthetic gases important to anesthesiologists? A large portion of anesthetic accidents are from anesthetic overdose or the failure to oxygenate or ventilate an anesthetized patient. The most important step in preventing anesthetic accidents is the rapid recognition of these critical events. Such problems may often be detected before injury of the patient by continuous monitoring of the gases in the breathing circuit. The measurement of gases in the operating room, however, has suffered from a lack of affordable, dependable technology capable of measuring all gases of interest in a continuous fashion.

Oxygen, the most commonly measured gas, has been monitored with polarographic devices that have a slow response time and a three- to six-month usable life. These sensors suffer frequently from calibration errors. Paramagnetic oxygen sensors are now available that have a response time fast enough to delineate inspired and expired oxygen concentrations. They have no consumable parts, are self-calibrating, and do not have cross sensitivity to the anesthetic agents. The initial cost is much more than that for currently used devices, but this may be compensated over time by replacement costs and reliability.

Expired carbon dioxide is measured most commonly by infrared spectroscopy. Volatile anesthetic agents have also been measured using infrared devices. This technology has suffered from calibration errors related to nitrous oxide concentration and humidity and a relatively slow response time for measuring the anesthetic agents. New digital processing methods have solved many of the calibration and cross-sensitivity problems inherent in these devices, making them more reliable and cost competitive.

The mass spectrometer has the ability to measure all of the gases of interest but has been so expensive that multiplexed systems were required in order to be affordable. Present problems with shared systems include limited sampling time and sample delays, poor reproduction of waveforms due to long sampling lines, and blockage of sampling lines. The mass spectrometer may also be disrupted for long periods of time by helium used in some laser procedures and propellants in inhalants used for treating asthma. New mass spectrometers are now available for single-patient use. They should solve many of the problems inherent in shared systems.

Raman spectroscopy represents the most significant new development in continuous gas monitoring. It measures gas concentrations by exciting the gas molecule with a laser and measuring the intensity of the scattered light emitted when the molecule returns to the unexcited state. The frequencies emitted by the molecule give a specific chemical identification of the gas. This instrument has been tested against a dedicated mass spectrometer and was shown to be equally accurate in both bench testing and clinical use. It is self-calibrating and has a rapid response time. The device is theoretically more durable than the mass spectrometer and is not disrupted by helium. The instrument offers a dedicated, durable, self-calibrating analyzer, which measures all of the gases of interest.

This newly available range of gas monitoring instrumentation is reliable, relatively cost-effective, and provides anesthesiologists with continuous on-line data. By alerting anesthesiologists to potentially adverse events during an operation at an early stage, these new technologies offer the hope of improved care and decreased morbidity and mortality.

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Chemical Basis for the TURP Syndrome

An array of hemodynamic and central nervous system (CNS) abnormalities has been described in some patients following transurethral resection of the prostate (TURP). The hemodynamic abnormalities include cardiac arrhythmias, hypotension, and even cardiovascular collapse, while the CNS abnormalities include confusion, transient blindness, seizures, and even coma. In the past these manifestations have been collectively called the "TURP syndrome" and have been generally attributed to dilutional hyponatremia and water intoxication from absorbing an excessive amount of irrigating solution during the surgical resection of the prostate gland. Absorption of 4 to 8 liters of sodium-free irrigating solution has been documented with dilution of the plasma sodium level down to nearly 100 mEq per liter. Because the sodium ion is necessary for depolarizing cells and for maintaining extracellular osmolality, hyponatremia is obviously presumed to be the cause of abnormal electrophysiologic responses of the CNS and the heart. Recent data suggest, however, that the absorption of glycine, the osmolar substance in the irrigating solution commonly used during TURP, may contribute to the TURP syndrome.

Glycine 1.5% is the most widely used irrigant because it is thought to be an effective osmotic replacement for sodium ions and to be nontoxic to the body. Glycine 1.5%, however, is slightly hypo-osmolar, being about 200 mosm per liter. Glycine is a nonessential amino acid with abnormal plasma level of 13 to 17 mg per liter. It readily crosses the blood-brain barrier and is an inhibitory transmitter in the spinal cord and in the synapses of the medulla, pons, tectum, and retina. Glycine has been shown to suppress the waveforms of both the electroretinogram and visual evoked potentials in rabbits.

More recently we have found that glycine, in quantities capable of being absorbed clinically—about 9,000 μmol per liter—can alter both the amplitude and the latency of visual evoked potential waves in anesthetized dogs. Cardiac output and mean arterial blood pressure were also depressed by glycine in this laboratory model. Ammonia, a biotransformed metabolite of glycine, has been suggested as another potential neural toxic agent. Although the vast majority of patients subjected to a transurethral resection of the prostate do not manifest significant CNS abnormalities, we have shown in patients who complained of visual and other CNS disturbances the presence of hyponatremia, hyperglycinemia, and hyperammonemia. The administration of hypertonic saline in patients with adequate renal function remains the treatment of choice for patients exhibiting the TURP syndrome. As yet, there has been no report of permanent visual disturbance, but clinicians should be aware of a chemical basis for the TURP syndrome in addition to hyponatremia and water intoxication.

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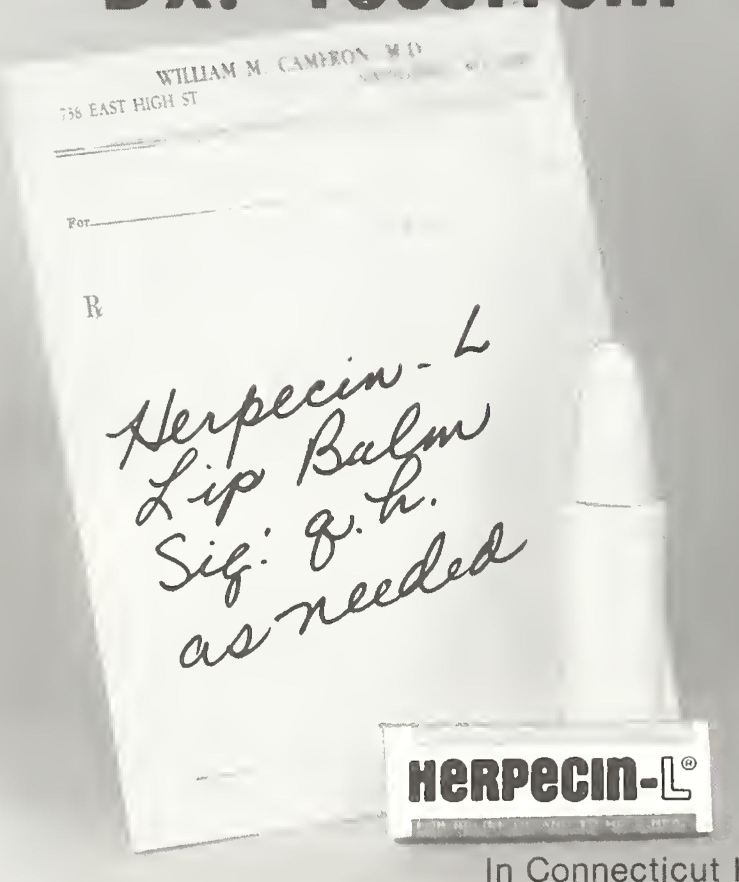

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Guidelines for Serum Drug Monitoring

DAVID PLATT AND DOREEN SCHNEIDER

SERUM drug monitoring (SDM) continues to be an important aspect of clinical pharmacology. SDM involves measuring serum drug concentrations and interpreting these results in light of specific clinical information about the patient.[1] Properly utilized, SDM can enable a clinician to gain valuable, objective information with which to optimize drug treatment. Improper utilization of serum drug concentrations can lead to erroneous assumptions and improper therapy, and may also increase the cost of patient care. The purpose of this paper is to summarize the relevant facts about SDM and to serve as a basic guide for monitoring serum drug concentrations.

Limitations of SDM

A basic prerequisite of SDM is the assumption that there is a direct relationship between serum drug concentration and drug effect.[2] Unfortunately, there are a number of factors that complicate this assumption. Serum drug concentrations do not necessarily correlate with concentrations at the site of action. Factors such as the presence of unmeasured active metabolites; the influence of concomitant disease or physiologic processes; and a time difference between peak concentrations and peak responses also obscure drug concentration-response correlations.

Clinically, serum drug concentrations are evaluated in reference to a "normal therapeutic range." The concept of a therapeutic range, however, is an oversimplification and serves merely as a generalization (ie, statistical convenience) for the clinician. There are patients who respond at concentrations below the therapeutic range and patients who require concentrations higher than the therapeutic range. Likewise, there are patients for whom a drug may be toxic at concentrations within the therapeutic range. The therapeutic serum concentrations for commonly monitored drugs are shown in Table 1.

SDM is especially useful for drugs with a narrow therapeutic index; where there are important consequences associated with therapeutic failure or toxicity; where interpatient pharmacokinetic variability exists; and where a clinical usefulness in therapeutic decision making has been demonstrated. In addition, there should be a reliable assay available with an acceptable turn-around-time.

Indications for SDM

To date, there are few studies that have evaluated the cost-effectiveness or cost-benefit of SDM.[3] Table 2 shows the most frequently encountered clinical situations where monitoring serum drug concentrations is useful. Before ordering a serum drug level, the clinician should assess the relevance of the test for an individual patient by asking questions such as: "What am I trying to determine? What is this serum concentration going to tell me? How is the result going to influence therapy?"

Sampling Time for SDM

Once these questions have been satisfied, the clinician should determine the appropriate time for obtaining the serum specimen. Ideally, SDM should be performed when two conditions have been met: 1) after steady state has occured and 2) when absorption and distribution phases are complete. Steady state concentrations are indicative of drug quantity in the patient with continued, maintenance dosing. It takes three to five half-lives for a steady state to be attained. A loading dose can be administered to achieve therapeutic concentrations when drug half-life is long (eg, digoxin) and/or rapid attainment of therapeutic concentrations is desired (eg, aminoglycosides). Therefore, when a loading dose is used, serum sampling can be done prior to steady state. Postabsorption/distribution serum samples exhibit a better correlation between serum and tissue concentrations. Samples obtained prior to completion of the distribution phase may not reflect drug concentration at the site of action. This is especially true for digoxin which has a four to six hour distribution phase.[4] Any concentration obtained before distribution has been completed will be spuriously elevated and misleading.

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Serum drug concentrations are usually obtained as either peak, trough, or mean concentrations. The timing of peak concentrations must take into account absorption and distribution. Time to peak is also dependent on route of administration and dosage form. Clinically, when peak drug concentrations are used for monitoring intravenous (IV) drugs, they are obtained within one hour after administration or the completion of infusion. Peak concentrations after intramuscular (IM) administration usually occur 30-60 minutes postinjection; however, some drugs have variable or erratic absorption after IM injection. Peak oral absorption can occur in 30-120 minutes, and is affected by many factors including bioavailability, gastrointestinal motility, presence of food, and dosage form (eg, immediate or sustained release). The product package insert should be consulted when necessary to insure appropriate timing of serum concentrations. Trough drug concentrations are usually obtained prior to the next dose. Trough concentrations are particularly useful when monitoring drugs with long half-lives (eg, digoxin, phenytoin). Mean drug concentrations are often obtained to determine theophylline clearance. For continuous IV infusions (eg, theophylline), mean serum concentrations can be obtained anytime after the steady state has been reached.

Serum concentrations should always be evaluated with respect to time of last dose administered. When toxicity or noncompliance is suspected serum samples should be obtained anytime that is clinically applicable. In the case of overdoses and acute toxicity, it is especially important to note the time of last dose, amount of dose, and dosage form in case further serum concentrations are needed to determine elimination half-life or when redosing should occur. For antibiotics, such as chloramphenicol and vancomycin, peak concentrations may correlate with toxicity.[5,6] For aminoglycoside antibiotics both peak and trough concentrations may correlate with toxicity.[7]

Table 1
THERAPEUTIC SERUM CONCENTRATIONS FOR COMMONLY MONITORED DRUGS

Antibiotics	*Therapeutic Range*	
Aminoglycosides		
Amikacin	peak(a)	20 - 30 mg/l
	trough	5 - 10 mg/l
Gentamicin	peak(a)	4 - 10 mg/l
Tobramycin	trough	1 - 2 mg/l
Chloramphenicol	peak(b)	10 - 20 mg/l
Vancomycin	peak(c)	20 - 40 mg/l
	trough	5 - 10 mg/l
Anticonvulsants		
Carbamazepine	trough	3 - 12 mg/l
Phenobarbital	trough	15 - 40 mg/l
Phenytoin total	trough	10 - 20 mg/l
free	trough	1 - 2 mg/l
Primidone	trough	5 - 15 mg/l
Valproic acid	trough	50 - 100 mg/l
Cardiac Agents		
Digoxin	trough	0.9 - 2 ng/ml
Disopyramide	trough	2 - 4 mg/l
Lidocaine	mean	1 - 6 mg/l
Procainamide (PA)	trough	4 - 8 mg/l
PA + NAPA*	trough	10 - 30 mg/l
Quinidine	trough	2.3 - 5 mg/l
Miscellaneous		
Lithium	trough	< 2 mmol/l
Theophylline	mean, trough	10 - 20 mg/l

peak(a) = 15 to 30 minutes after a 30 to 60 minute infusion (7)
peak(b) = 30 minutes to 1.5 hours after a 30 minute infusion (5)
peak(c) = 60 minutes after a 60 minute infusion (8)
trough = just prior to the next dose
mean = during continuous IV infusion
*NAPA = n-acetylprocainamide

Table 2
CLINICAL SITUATIONS FOR MONITORING SERUM DRUG CONCENTRATIONS

Clinical Situation	*Examples*
1. Evaluate drug overdose	acetaminophen, aspirin
2. Evaluate acute drug toxicity	chloramphenicol, lidocaine, phenytoin, theophylline
3. Check patient compliance	digoxin, theophylline
4. Evaluate complicating factors (eg, renal disease, drug interactions, etc)	aminoglycosides, digoxin, theophylline, phenytoin
5. Evaluate optimal response or non-response	aminoglycosides, anticonvulsants, theophylline, vancomycin
6. Individualize drug dosage regimens (pharmacokinetic modeling)	aminoglycosides, antiarrhythmics, phenytoin, theophylline, vancomycin
7. Verify therapy for medicolegal purposes	lithium

For most drugs, to evaluate nonresponse or therapeutic failure, the clinician should obtain a steady-state trough concentration. However, for antibiotics, such as aminoglycosides and vancomycin, peak concentrations have been shown to correlate better with therapeutic efficacy.[6,7]

Individualizing drug-dosage regimens is a common use for SDM.[1] Serum concentration versus time data are evaluated mathematically to determine pharmacokinetic parameters such as clearance, volume of distribution, and half-life. These parameters can then be applied to pharmacokinetic models to "target" for desired serum concentrations and help to optimize therapy. In many hospitals, clinical pharmacists can provide dosage individualization consults.

Stepwise Approach to SDM

When utilizing SDM for an individual patient's care it is helpful to have an organized approach to monitoring. Serum drug concentrations should always be interpreted while considering specific patient information. The following steps should be considered as useful guidelines for SDM:

1. Review present drug therapy.
2. Review previous serum drug concentrations and any correlations with drug efficacy or toxicity.
3. Establish the purpose/benefits for present SDM.
4. Document relevant patient factors (eg, diseases, laboratory values).
5. Understand the pharmacokinetic properties of the drug being monitored.
6. Determine the dose and route of administration.
7. Determine the time of last dose given and sampling time.

8. Evaluate any possible drug assay interferences.
9. Interpret the serum drug concentration considering the above information.
10. Determine a follow-up monitoring plan, if necessary.

Conclusion

When used properly, SDM can provide valuable information to guide clinicians in achieving optimal drug therapy. The important aspects of using SDM are to understand its limitations; carefully assess its benefits for individual cases; appropriately time samples used for evaluation; and evaluate serum drug concentrations with respect to relevant patient information.

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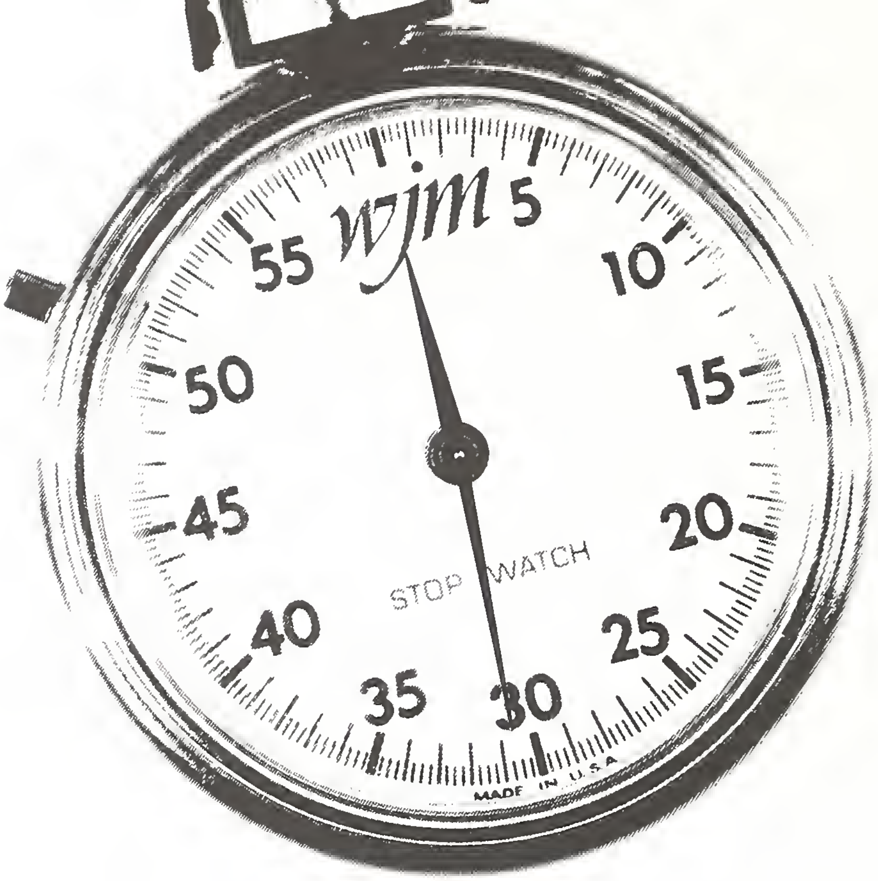

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Civil Liability of Peer Review Participants: *Patrick v. Burget* and the Health Care Quality Improvement Act of 1986

STEPHEN E. RONAI, ESQ., AND MARTHA EVERETT MENG, ESQ.

THIS paper represents a detailed discussion of the potential for civil liability of Connecticut peer review participants in light of the May 1988 Supreme Court decision in *Patrick v Burget* and the enactment of the Health Care Quality Improvement Act of 1986. Under the Court's holding in *Patrick,* Connecticut providers are not immune under the state action exemption from liability in federal antitrust actions; however, significant protection from liability in antitrust and other state and federal civil actions is available if the peer review process conforms to the standards set forth in the Health Care Quality Improvement Act. Notwithstanding this protection, peer review participants may still be subject to civil liability for actions taken in bad faith or with anticompetitive or other improper motivation.

On May 16, 1988, in the widely publicized case of *Patrick v Burget,* 56 U.S.L.W. 4430 (May 16, 1988) (No. 86-1145), the United States Supreme Court unanimously held that Oregon physicians are not protected by the federal antitrust exemption known as the state action doctrine for their activities on hospital peer review committees. The Supreme Court's decision was based on an analysis of the Oregon regulatory framework governing licensure of physicians, hospital credentialing, and peer review. It is not necessarily definitive with respect to the application of the federal antitrust state action exemption to hospital-based peer review activities conducted under the laws of other states. In Connecticut, however, because the relationships between the State Department of Health Services, the Connecticut Medical Examining Board, and the conduct of credentialing and peer review by medical staff physicians closely parallel the Oregon system at issue in *Patrick,* it is probable that, under the Court's holding in *Patrick,* Connecticut physician peer review activities also would fail to qualify for state action immunity from antitrust liability.

The *Patrick* decision should not, as some have feared, result in a new wave of antitrust actions against peer review participants. It simply makes one of the defenses against such actions unavailable to providers in states that do not "actively supervise" peer review decisions. A physician plaintiff whose medical staff privileges are denied, suspended, terminated, or otherwise curtailed and who sues physician peer review participants under the federal antitrust laws still faces a considerable burden of proof with respect to establishing both jurisdiction and liability under the federal antitrust laws.

Futhermore, while an absolute federal antitrust exemption under the state action doctrine might have been a preferable line of defense in such actions, since the commencement of the *Patrick* case Congress has insulated peer review activities from antitrust and other civil liability through its enactment of the Health Care Quality Improvement Act of 1986, 42 U.S.C.A. §§ 11101 - 11152 (Supp. 1988). Essentially, the Act protects peer review actions if the actions were taken in the reasonable belief that they would further quality health care and if the procedures implemented by the hospital for professional review action in its Medical Staff bylaws follow specified notice, hearing, and other procedures consistent with the usual requirements of due process. *See* 42 U.S.C.A. § 11112.

Thus, for Connecticut peer review participants, the *Patrick* decision is relevant only as it may apply to federal antitrust actions initiated prior to the effective date of the Act, or in which the plaintiff can demonstrate bad faith or anticompetitive or other improper intent on the part of persons conducting peer review activities or that appropriate due process protections were not available. This review of the background and holding of the *Patrick* case and the specific provisions of the Health Care Quality Improvement Act will assist peer review participants in implementing and adhering to procedures that should enable them to further the goal of quality health care while avoiding civil liability.

I. PATRICK V. BURGET: THE STATE ACTION IMMUNITY DOCTRINE

A. The Factual Background

The lawsuit in *Patrick* arose out of events in Astoria, Oregon, a small community about ninety miles from Portland. The plaintiff, Dr. Patrick, was a general and vascular surgeon who practiced at the Astoria Clinic. The partners and employees of the Astoria Clinic comprised a majority of the physicians holding staff privi-

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leges at the only hospital in Astoria, Columbia Memorial (CMH).

After a dispute as to fees, Patrick left the Clinic and began an independent practice, retaining his staff privileges at CMH. After he entered individual practice, the Astoria Clinic physicians shunned Patrick; they made no referrals to him, instead referring surgical patients to physicians as far as 50 miles away, and refused him back-up coverage and assistance with surgery. Eventually, one of the partners in the Clinic who was also a member of CMH's Medical Staff impelled the Medical Staff to refer an incident of alleged improper patient postoperative supervision by Patrick to the Oregon Board of Medical Examiners (BOME), a state agency. Another partner of the Clinic chaired the investigatory committee appointed by the BOME. Ultimately a letter of reprimand was issued by the BOME but was withdrawn after Patrick sought judicial review.

Two years later, at the request of another Astoria Clinic surgeon, the Executiive Committee of the CMH Medical Staff commenced a review of Patrick's hospital staff privileges. After the Committee voted to recommend termination of privileges on the grounds that his care of patients was below the standard of the hospital, Patrick demanded a hearing before a five-member Ad Hoc Committee. This Ad Hoc Committee was chaired by the same partner at the Astoria Clinic who earlier had urged the CMH Medical Staff to refer Patrick's allegedly improper conduct to the BOME and who had testified against Patrick before the BOME. Before a final decision was rendered by the Committee, Patrick resigned from the Medical Staff rather than risk termination of his privileges.

B. The Lawsuit

Patrick then brought a lawsuit in federal court under sections 1 and 2 of the Sherman Antitrust Act against the Astoria Clinic partners who had initiated and participated in the hospital peer review proceedings and against the hospital.[1] He claimed that the object of the peer review proceedings had been to reduce competition rather than to improve patient care. The District Court instructed the jury that it could rule in Patrick's favor only if it found that the physicians' conduct was the result of a specific intent to injure or destroy competition. The physicians contended that, even if their peer review activities were anticompetitive in intent and therefore a violation of the federal antitrust statutes, these activities fell within the state action exemption from antitrust liability because the State of Oregon had articulated a policy in favor of peer review and actively supervised the peer review process.

The jury found for Patrick and awarded him nearly $2.3 million in damages, including treble damages and attorneys' fees. The defendant physicians then appealed to the Ninth Circuit Court of Appeals. Although the Ninth-Circuit emphatically condemned the physicians' actions, characterizing them as "shabby, unprincipled and unprofessional," it held that their conduct nevertheless was exempt from antitrust liability under the state action doctrine. 800 F. 2d 1498, 1509 (9th Cir. 1986). This question was the sole issue on appeal to the United States Supreme Court, which reversed the Ninth Circuit's holding.

C. The State Action Doctrine

The Supreme Court's rationale in rejecting the Oregon physicians' reliance on antitrust immunity pursuant to the state action doctrine is fully consistent with its development of this doctrine in prior cases involving other industries. The Court held that physicians' peer review activities are immune from federal antitrust scrutiny "only if the state effectively has made this conduct its certain circumstances a denial of Medical Staff privileges or corrective action pursuant to Medical Staff bylaws in the form of limitation, suspension or termination of staff privileges may be considered an anticompetitive practice under the antitrust laws. In other contexts, when the state action doctrine has been invoked as a defense to antitrust liability, the Court has applied the two-pronged test set forth by the Court in *California Retail Dealers Liquor Association v Mid-Cal Aluminum, Inc.,* 445 U.S. 97 (1980). This test requires that (1) the challenged anticompetitive restraint be "clearly articulated and affirmatively expressed as state policy" and (2) the policy be "actively supervised" by the state. The issue before the Supreme Court in *Patrick* was whether the statutory scheme in Oregon for hospital-based peer review met this test.

The Court answered that question in the negative, focusing principally on the "active supervision" prong of the *Mid-Cal* test. The Court reasoned that the "active supervision" test "requires that the state officials have and exercise power to review particular anticompetitive acts of private parties and disapprove those that fail to accord with state policy. Absent such a program of supervision, there is no realistic assurance that a private party's anticompetitive conduct promotes state policy, rather than merely the party's individual interest." 56 U.S.L.W. at 4432. By referring to and quoting extensively from the opinion of the Court of Appeals regarding the improper and individual motivation underlying the defendant physicians' conduct, the Court emphasized its view that the "active state supervision" requirement for invocation of the state action exemption is essential to prevent the unjust application of the exemption to shield anticompetitive actions taken in furtherance of individual, rather than governmental, interests. Oregon's statutory scheme, which does not authorize review of peer review decisions by any state agency, fails to provide the degree of state involvement necessary to meet the "active supervision" requirement.

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[1] The hospital later entered into a separate settlement with Dr. Patrick.

D. The Oregon and Connecticut Peer Review Regulatory Schemes - A Comparative Analysis

The Oregon statutory scheme governing peer review, which under the *Patrick* holding did not permit the invocation of state action antitrust immunity, is strikingly similar to Connecticut's statutory supervision of the peer review process. Oregon's Health Division has general supervisory powers over "matters relating to the preservation of life and health," including the licensing of hospitals and the enforcement of all health laws. Hospitals in Oregon are under a statutory obligation to establish peer review procedures and to review these procedures on a regular basis. The Health Division may initiate proceedings against any hospital that fails to implement such procedures. In addition, hospitals must notify the Oregon Board of Medical Examiners of any decision involving restriction or termination of staff privileges. Under this statutory scheme, however, neither the Division nor the Board of Medical Examiners is authorized to review decisions made pursuant to these procedures. For this reason, the Supreme Court held that the State of Oregon did not "actively supervise" the peer review process.

In Connecticut, the Department of Health Services exercises comparable powers and hospitals similarly are required by law to establish peer review procedures. The Department's Medical Examining Board also must be notified of any decision to restrict or terminate staff membership or privileges. Conn. Gen. Stat. § 20-13d (b); Regulations of Connecticut State Agencies § 19-13-D4a (c) (1) (F). But neither the Department nor the Medical Examining Board is authorized by statute to review such decisions. Therefore, in accordance with the Court's holding in *Patrick v Burget,* it appears that the Connecticut regulatory scheme does not provide the degree of "active supervision" of peer review activities which would permit an exemption from antitrust liability for such activities under the state action doctrine.[2]

Under the *Patrick* holding, Connecticut hospitals and physicians concerned about potential antitrust liability for peer review activities could seek, through Connecticut legislative enactment, a level of state review of and involvement in peer review decisions that would meet the "active supervision requirement" necessary for state action immunity. Such a revision of the Connecticut statutory scheme, however, would almost certainly complicate and prolong the decision-making process and would permit a degree of state intrusiveness into the peer review process that most providers would find undesireable. Thus, Connecticut hospitals and physicians who participate in the peer review process should look to the provisions of the Health Care Quality Improvement Act of 1986, described below, for protection from liability.

II. THE HEALTH CARE QUALITY IMPROVEMENT ACT OF 1986

The Health Care Quality Improvement Act of 1986, 42 U.S.C.A. § 11101 *et seq.,* provides limited immunity for peer review participants with respect to private federal antitrust or other actions for damages (excluding actions pursuant to the Civil Rights Acts of 1964 and 1981) initiated on or after November 14, 1986, provided that the peer review or credentialing process conforms to the standards of the Act. With respect to actions for damages that may be brought under state law in such situations, the protections of the Act will be applicable as of October 14, 1989 unless the state "opts out" by legislation. A state also may elect, by legislation, to "opt in" at an earlier date. To our knowledge, the Connecticut legislature has not taken any action as yet; therefore, unless this becomes an issue in next year's legislative session, it is likely that the protective provisions of the Act will automatically become applicable to actions brought under Connecticut law on or after October, 14, 1989.[3]

Congress granted this limited immunity to encourage vigorous and uninhibited peer review by hospital medical staffs and their constituent bodies, extending immunity to all "professional review bodies" that engage in "professional review action." The Act defines a "professional review body" as a health care entity (i.e., a Hospital), its governing body, or any committee which engages in professional review activity, including a medical staff committee. The term "professional review action" means an action or recommendation of a professional review body based on the competence or professional conduct of a physician which affects adversely his clinical privileges or his membership in a professional society. The term "clinical privileges" is broadly defined as including both clinical privileges *and* medical staff membership.

In the hospital setting, the focus of professional review action is on the Medical Staff acting pursuant to the Hospital's Medical Staff bylaws. To eliminate the inhibiting effect of lawsuits by disappointed physicians subsequent to a denial, suspension or limitation of staff privileges, the Act provides that peer review action is immunized from civil claims by private parties seeking damages if the review action was taken:

1. in the reasonable belief that the action was in furtherance of quality health care,
2. after a reasonable effort to obtain the facts of the matter,
3. after adequate notice and hearing procedures are afforded to the physician involved or after such other procedures as are fair to the physician under the circumstances, and
4. in the reasonable belief that the action was warranted by the facts known after such reasonable effort to obtain facts and after meeting the requirements of paragraph (3). 42 U.S.C.A. § 11112 (a).

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[2] The Supreme Court in *Patrick* also concluded that, because judicial review of peer review decisions by the Oregon courts generally has been limited to an examination of whether the plaintiff physician was afforded adequate procedural protections, such review did not constitute "active state supervision" over the substance of such decisions. We believe this conclusion would be applicable in Connecticut as well.

[3] Connecticut peer review participants also already are afforded limited immunity pursuant to Conn. Gen. Stat § 38-19a *et seq.*

Thus, Medical Staff committees, hospitals, and hospital Boards of Trustees are protected in the process of granting or limiting medical staff membership or defining or limiting clinical privileges, if the peer review meets these standards.[4]

The Act further creates the important presumption that all peer review activities meet the foregoing criteria unless the plaintiff is able to rebut this presumption by a preponderance of the evidence. In addition, specific procedural safeguards are set forth which, if followed by the peer review entity, are deemed to constitute the "adequate notice and hearing procedures" described above, thus providing peer review participants the security of a "safe harbor" from liability. These detailed procedures, set out at 42 U.S.C.A. § 11112(b), concern notice of the proposed action, the right to a hearing, the contents of the notice of hearing, if one is requested, and the hearing process itself. The new Medical Staff standards of the Joint Commission on Accreditation of Healthcare Organizations, effective January 1, 1988, were designed to ensure consistency with these provisions.

To ensure that peer review procedures meet all the procedural conditions for preserving the immunity offered by the Act, the Medical Staff bylaws must provide for a hearing not sooner than 30 days after the issuance of the notice, notification to the physician of the names of the witnesses to be called, a hearing before a mutually acceptable arbitrator, or an independent hearing officer appointed by the hospital who is not in direct economic competition with the physician involved, or one or more phyicians who are not in economic competition with the physician involved, as well as other due process protections customarily provided in formal administrative hearings: the right to counsel, cross-examination, and similar protections.

With respect to the person or persons who will conduct the hearing, it should be noted that smaller hospitals, in particular, may find it difficult to convene a panel of physicians who are not in direct economic competition with the physician who has requested the hearing. Therefore, the bylaws of these hospitals should also provide for one or both of the two other acceptable alternatives of an arbitrator or an independent hearing officer. The hospital has the right to determine which entity shall conduct the hearing and any of these three choices is permissible. While failure to have these specific procedures in place will not, in and of itself, constitute failure to conform to the standards of the Act, the security of the "safe harbor" protection with respect to the Act's procedural requirements would be lost. Moreover, nonconforming procedures could give rise to a claim that the hospital's peer review process is suspect. Therefore, hospitals and physicians should make every effort to ensure that Medical Staff bylaws conform strictly to these requirements.

Conclusion

Because of the enactment of the Health Care Quality Improvement Act of 1986, the practical effect of the *Patrick* decision is extremely limited. Peer review participants, however, should remember that actions taken in bad faith or in furtherance of any anticompetitive or other improper objective will not be insulated from liability either under the Act or antitrust or other relevant laws. Therefore, hospitals and physicians should attempt to ensure not only that peer review procedures conform to the requirements of the Act but also that the decisions made pursuant to these procedures are free from any such suspect motivations.

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[4] The Act also provides for recovery of cost and attorneys' fees by peer review defendants if an unsuccessful plaintiff has brought an action in bad faith, frivolously, unreasonably or without foundation. 42 U.S.C.A. § 11113.

The Connecticut Hospice, Inc. and AIDS: A Profile

JUDITH JANSSON, A.R.T.

THE demand for alternative methods of care for AIDS patients in the New Haven community obliged The Connecticut Hospice, Inc. to make a commitment to accept these patients.

Unfortunately with an unknown disease and especially one so volatile as AIDS, there was a certain amount of fear on the part of all staff regarding the admission of these patients. Much time was spent preparing the entire staff and the building for receiving them.

One of two private rooms on each wing was set aside for AIDS patients. Each of these rooms was renovated to allow proper isolation procedures. A sink was installed to facilitate good hand washing techniques and the curtains that were inside the room were moved to the outside because all fabric used in the room had to be washed with Clorox.

Twenty in-service educational programs were held which were open to all employees but were especially directed to the caregiving personnel. Topics for the general programs include:

1. What's known about AIDS
2. AIDS overview for our staff and their families
3. Personal issues with AIDS patients and families
4. Updates on AIDS

Some of the in-service programs for the employees consisted of:

1. Nursing care of AIDS patients
2. Isolation techniques for AIDS
3. AIDS patients at home
4. AIDS patients in the inpatient setting

We also had a program for the caregiving volunteers entitled; "Special In-services for Inpatient Volunteers on AIDS and Universal Precautions."

Isolation techniques used at first were very elaborate, eg, masks, gowns, gloves, and extensive bagging of linen and discardable items.

When all of these items had been thoroughly discussed we began to accept referrals for admission of AIDS patients. At this time we also did an on-site evaluation of prospective patients and finally in July 1985 our first inpatient AIDS patient was admitted. Our first home care patient was accepted on the program in April 1987.

Through March 1987 we admitted 15 patients; their mean age was 31 with a minimum age of 27 and a maximum age of 81. The male/female ratio was 2:1. The mode of disease transmission was 53% I.V. drug abuse, 27% homosexuality, and 20% transfusion. One of the most significant facts is that the length of illness from initial diagnosis was 17 months and the average length of Hospice stay was only 17 days. One of the patients included in this group was a home care patient who had a length of stay of 30 days.

Since the admission of the first 15-20 patients, several phases of our AIDS program have changed. We feel we can effectively screen the AIDS patient in the same manner we screen all out patients so that onsite evaluation is no longer done.

Patients are allowed to come into the family rooms and into the Commons for special events. We are using the same infection control precautions that we use for hepatitis B patients.

Between March 1987 and March 1988 we admitted ten more patients; Their mean age was 40, ranging from 25 to 75. The male/female ratio was 9:1. The mode of disease transmission in three was I.V. drug abuse, six were homosexuals and one acquired the disease from a blood transfusion. With these ten patients the length of illness from initial diagnosis was just over 13 months and the average length of stay in Hospice was 22 days. Of these ten patients three were served in our home care program. These three patients had an average length stay of 22 days.

Since admitting patients to Hospice we have had three occasions when a patient stabilized and could have been discharged for a short time. Not only was there no alternative care setting willing to take these patients, but sometimes the patient's family refused to take the patient into his own home and also refused any contact with him. This was also often true after the patient had been diagnosed with AIDS but was still well enough not to require care at Hospice. The Connecticut Hospice therefore, has felt the need to provide a safe environment for these patients. In order to do this the "Hospice Cottage" was purchased on adjoining property. This "cottage" is now being extensively renovated and will eventually accommodate five individuals. Since these patients will not need extensive care and will be ambulatory the "cottage" will provide a home-like atmosphere and a support system. No curative care will be given.

Admission criteria will be the same as those for our other home care patients, namely, a six-month or less prognosis and the consent of the referring primary physician, patient, and family.

When the disease has progressed to the point that the person can no longer care for himself, admission to the inpatient Hospice facility will be arranged.

JUDITH JANSSON, A.R.T., Medical Record Librarian, The Connecticut Hospice, Inc. Branford, CT 06405.

Price Controls for Medical Services and the Medical Needs of the Nation's Elderly

(Second of Two Parts)

WILLIAM J. BAUMOL

III. A More Effective Explanation Of The Problem— The "Cost Disease" Of Personal Service Industries

NO single all-encompassing explanation can itself account for the pattern of behavior of the price of services as complex and variegated as medical care. However, there is one component of profound importance that has been largely overlooked in discussions of rising medical costs. The rate of price increase of any product or service is heavily influenced by the rate at which the productivity of its output process has increased. The faster labor productivity in the process of supply of the item in question has grown, the more slowly, all other things being equal, its prices will tend to rise.

The term "personal services" refers to a category of services in which direct personal contact between the supplier and the consumer is an essential feature of the service. Personal service industries have proved extraordinarily resistant to productivity increases. These services have consequently been characterized by persistently high rates of price increase, rates which are attributable not to inefficiency or to abnormal pursuit of financial gain or other forms of misbehavior, but to the technological character of their production. Medical care is one of these personal services industries, and the price rises which it has experienced are typical of those of personal services generally.

The quality of the product in medical care is dependent on the amount and quality of attention that the patient receives from the physician. Illness does not come in a few simple standardized models. As a result, assembly-line treatment is simply not an available option. A doctor who begrudges time to patients short changes them as much as a teacher who avoids spending time with students. Consequently, although spectacular progress obviously has occurred in the field of medicine and contributes—often dramatically—to the health, longevity, and comfort of patients, this advance has contributed less to reducing the amount of skilled labor on the part of the doctor. Thus, as long as one makes no adjustment for the rising quality of the product, productivity of labor in medicine as a general matter shows no signs of substantial growth.[14]

I shall refer to productivity growth unadjusted for quality changes as "crude productivity growth." The reason I focus on crude productivity growth is that our present purpose is to account for the persistent rise in the price of a doctor's services[15]—that price *not* being adjusted for the improvements in quality that medical research and innovation have been able to contribute. We must compare like with like—with price and output both unadjusted for changes in quality.

The low rate of growth of crude productivity in medical care relative to that in manufacturing is not a result of deliberate design or inadvertent behavior. Rather, it is a consequence of the technological imperatives of supply of the medical care service in the current state of technology. The problems of medical care cannot by and large be standardized and rendered routine. Patients therefore cannot be cared for without individual attention. A reduction in the attention that a doctor devotes to a patient results in a concomitant reduction in the quality of medical care. The quantity of labor input, as a technological matter, is not generally reducible without degradation of that service. This is the essence of the reason that medicine has experienced very low growth in crude productivity.

This lag in crude productivity growth has a profound effect on costs and pricing because it in effect pits the

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[14] Like most generalizations, this one has exceptions. There are some areas of medical care in which technological advances seem not only to have improved the quality of service, but also to have reduced the labor component. One example sometimes cited is cataract surgery, a service performed by ophthalmologists; technological advances have enabled surgeons not only to improve the quality of surgical procedures but also to reduce the amount of surgeon time on average per individual procedure. The existence of this and other exceptions, however, does not undercut the validity of the generalization. Moreover, institutional rules such as those referred to in footnote 6, *supra*, may impede differences in rates of productivity growth of the various medical services from appearing fully in the time paths of their respective prices.

[15] It should be noted again that innovation and improvement in quality of health care can, in principle, even reduce the average cost per illness, despite a rise in cost per hour or per day of health care, if less time is now required for recovery than was needed previously.

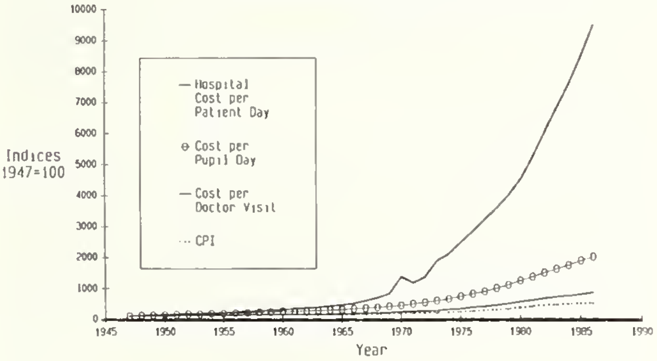
suppliers of medical care services against the suppliers of other outputs which typically *have* been characterized by a substantial and persistent record of productivity growth. Over the past century productivity of the typical product in the U.S. economy, including services as well as goods, has grown at a compounded rate of some 2% per annum. By virtue of compounding, this has yielded a staggering total increase of some 1,100%. The implication is that if relative input prices in medical services and elsewhere stay more or less the same as inputs in the rest of the economy, then medical costs—with virtually no productivity growth offset—will *rise* about 2% a year *faster* than the costs of other typical products of the economy (whose input price increases are offset by the rise in their productivity).

For example, if wages and prices of other inputs of product X rise 5%, but their hourly productivity rises 2%, then the net effect will be a 3% increase in the cost of a unit of product X. But a similar 5% rise in input costs and wages in medicine will necessarily lead to an approximate 5% rise in the cost of a medical care service because there is little or no intervening growth in productivity to contain the cost rise caused by the increased cost of inputs.

This "cost disease" of the personal services explains much of the persistent increase in the costs of such services as education, concerts, and postal delivery.[16]

This "cost disease" explanation of the rising cost of personal services such as medical care or education does not depend upon assumptions about avarice, wickedness, or inefficiency. Its causes are to be found in the nature of the affected services and the difficulty of improving the productivity of those services. The "cost disease" explanation is not, however, the entire story.

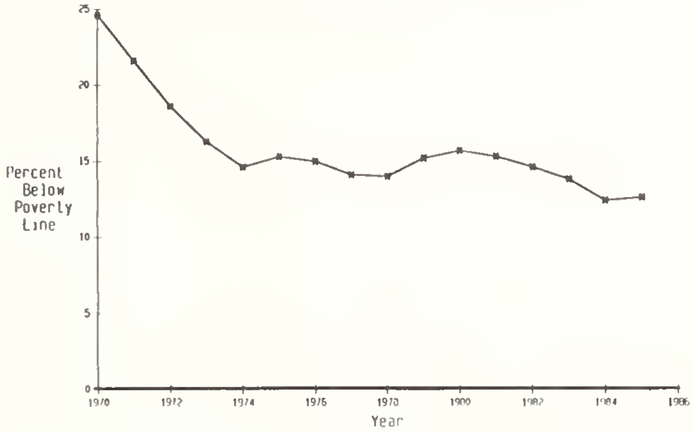
Figure 8. Cost Indices for Three Activities. 1947-1986
Several Missing Data Points Interpolated



IV. Another Part Of The Problem—The Costs Of Quality Improvements In Medical Care

If the "cost disease" were the complete explanation of rising medical prices, then the relative price of medical care should grow more or less steadily, and should produce an intertemporal pattern rather similar to that of other personal services, such as education. Figure 8 summarizes the pertinent facts. It shows four time series for the period 1947-1986: (1) the CPI, as an indicator of the economy's overall rate of inflation; (2) an index of the cost of hospital operation per patient day; (3) an index of the price per visit to a doctor's office; and, for comparison, (4) an index of the cost of elementary education per pupil per day. All of the data are derived from U.S. Government sources, identified in the attachment following Figure 10. For ease of comparison, the indices have all been constructed so that 1947=100, meaning that they have all been shifted to start at the same point in the graph. From that beginning each curve increases at the year-by-year rate indicated by the underlying data.[17]

Figure 9 Poverty Rate, Persons 65 Years and Over, 1970-1985



Each of the three graphs other than the CPI assumes the general shape suggested by the cost analysis, increasing cumulatively and fairly steadily. They all increased significantly faster than the CPI. However, the three growth rates were markedly different from one another. Over the entire period the annual growth rate of the CPI averaged about 4.2%. That of the price of a physician visit was modestly higher: 5.5%. The cost of education per pupil day increased at a significantly higher rate: 7.7%. But the cost per day of hospital care exploded, with a growth rate of 11.7%, which may have been offset to some degree by a decline in the average length of hospital stay.[18] The graph shows the dramatic long-term differences that have resulted. Clearly, those differences leave something other than the "cost disease" to add to the explanation.

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[16] My favorite illustration of this "cost disease" phenomenon is the performance of a string quartet written by Mozart for a half-hour performance. Since the eighteenth century nothing has contributed to the productivity of a live performance of this composition. There has been no reduction either in the equipment (four instruments) or the labor time (two person hours) required. Meanwhile, since the time of Mozart, the amount of labor and the cost of the inputs required to produce a loaf of bread has probably decreased about twenty-fold. This means that the cost of admission to a concert, measured in terms of number of loaves of bread, must be about twenty times as high today as it was at the time of Mozart.

[17] The comparisons in Figure 8 are not perfectly parallel. For instance, the index of price per physician office visit does not include all derivative or related costs of this activity—*e.g.*, follow-up tests, x-rays, and further examinations. The index for cost of education per pupil day, on the other hand, includes all public expenditures—both primary and derivative—involved in the education process. This lack of strict parallelism is not of significance here, however, because Figure 8's purpose is not to show that there is a substantial difference between the rate of increase in educational and medical costs, but rather to indicate that both have exceeded the rate of inflation.

The fact that labor saving innovation is difficult to achieve in medical care does not rule out innovation of other kinds. In fact, medicine has been characterized by some of the most dramatic innovations in recent history. However, these innovations have been largely quality-enhancing, rather than cost-reducing. Indeed, unlike innovations in a number of other fields, it appears that changes in medical care technology have characteristically served to increase costs. This point has been documented to some degree[19] and an examination of illustrative recent technological innovations[20] strongly suggest that this point is valid as an overall characterization of the nature of the new technology that has been the instrument of progress in medicine.

The data on relative cost trends displayed in Figure 8 tend to support this hypothesis. The basic difference between the technological character of a visit to a physician and a day at a hospital that can account for the relative modesty of the rise in the cost of the one and the sharp increase in the cost of the other is the difference in their input proportions. A visit to a doctor's office involves a labor-intensive service, with the bulk of the input consisting of the labor of the doctor and the nurse. Although some equipment is involved, it constitutes a minor share of the total outlays entailed in operating a typical doctor's office. On the other hand, the typical modern hospital has become a repository of increasingly sophisticated equipment, of complex and demanding diagnostic and treatment procedures, and of esoteric laboratory operations. If the introduction of innovations in each of these components of hospital operations had simply been neutral in its effect on crude productivity growth, then the cost of a hospital stay should have risen no faster than that of an office visit.

Accordingly, part of the cause of the explosion of hospital costs is to be found in technological *improvements* and the increasing complexity and cost of the equipment and procedures that the new technology entails. The increase in cost attributable to technological change and innovations that improve the quality of medical services is in no way inconsistent with the role of the "cost disease" as a principal explanation of the rising price of medical care. The absence of productivity gains in labor-intensive service industries—the persistent use of approximately the same number of hours to produce medical services when other industries use even fewer hours (and other inputs)—is one source of increasing price; another source is the higher cost of new technology introduced in order to provide a service of higher quality.

V. The Inadequacy Of Price Controls As A Solution To The Problem Of Increasing Medical Prices

With an understanding (albeit imperfect) of the primary causes of rising prices of medical services—the lack of productivity improvements in labor-intensive service industries, together with the increasing costs of improved medical technology—we turn to the quest for solutions to this very serious problem.

As we have seen, one possible solution is price controls—*i.e.,* legal constraints on the amounts doctors can charge for their services. Before addressing the merits of this approach, it is worth noting one feature of the proposed solution: its narrow focus upon the prices paid by the elderly.

It is not at all obvious that this restriction is appropriate. Surely, the legitimate subjects for public concern are the impoverished, whatever their age group may be. It is clear that not all of the elderly are poor, and that not all of the poor are elderly. Still, there is an impression that retired persons constitute a group particularly vulnerable to low incomes, that they are particularly poorly protected against the ravages of inflation, and that they are consequently the one clearly identifiable group that is most obviously in need of protection against rising medical costs. One pertinent fact is reasonably sure: the elderly are especially vulnerable to illness. Thus, medical care costs typically loom larger in their budgets than those of younger age groups.[21]

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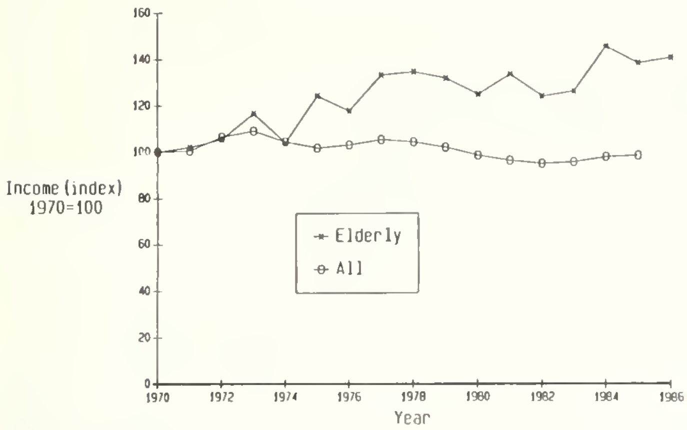
[18] This decline in average length of hospital stay may have been caused, in part, by Medicare's adoption of the DRG (Diagnostic Related Group) system of reimbursing hospitals. 42 U.S.C. § 1395ww(d). The DRG program reimburses hospitals a fixed amount for a given service, regardless of the hospital's actual costs. Consequently, the system creates an incentive for hospitals to treat as many patients as possible on a less costly outpatient basis. The index for cost of hospital operation per patient day, therefore, may be offset to some extent by this shift to outpatient treatment. On the other hand, the fact that under the DRG system only sicker patients remain in the hospital may have a countervailing effect on the index for hospital costs per patient day. The overall result of these conflicting influences is uncertain.

[19] See Russell, Louise B., *Technology in Hospitals: Medical Advances and Their Diffusion,* Washington: The Brookings Institute, 1979.

[20] Appendix A lists recent illustrative technological innovations that appear to have been quality-enhancing but also cost-enhancing rather than cost-reducing.

[21] However, this is not the end of the matter because of the large contribution to the medical care costs of the elderly that is already made by the Medicare system. Moreover, the empirical evidence indicates that the vulnerability of the elderly to poverty and the ravages of inflation is not as great as is often supposed. Figures 9 and 10 summarize the relevant facts. Figure 9 shows the percent of persons 65 years of age and older who fall below the officially defined poverty line. These data, taken from the *Current Population Report* of the U.S. Bureau of Census and covering the period 1970-1985, show that there has been a sharp drop in the poverty rate of the elderly, particularly in the earlier years of the period depicted, and that it has continued to fall, albeit more modestly. Although almost a quarter of the elderly fell below the poverty line in 1970, that figure has been cut in half, to less than 13% in 1985. Figure 10 supplements this finding by showing the time path of average real income of the elderly in comparison with that of the population as a whole. These figures, derived from Census reports and the 1987 *Economic Report of the President,* are reported in the graph in index form, giving the figures the same starting point (1970) for ease of comparison. The conclusion that emerges from the graph is that the elderly have become steadily better off in the past 15 years, both in terms of absolute real incomes and in comparison with the population as a whole. Whether or not the elderly once constituted the group most in need of protection against rising medical prices, this is growing constantly less true with the passage of time. Thus, the question whether the elderly should be the **one** focal group for public protection against rising medical prices is one which merits careful consideration.

Figure 10 Median Income 1970-1986,
Elderly vs All People



The basic question is whether the best way to protect *any* group—either the entire population, or only the elderly—is through price controls. In examining this issue, it is useful first to review the general objections to price controls as a solution to rising prices, and then to consider whether there is anything about the medical care markets which suggests that price controls would be a more appropriate solution to the problem of rising prices in this sector of the economy.

A. The General Objections To Price Controls

Throughout history, there have been countless instances in which the public's sense of justice was offended by prices charged for particular goods or services in the open market, particularly when the sellers of the expensive items did not enjoy great popularity.

Attempts to control interest rates (the price of borrowing money) track back at least to the code of laws compiled under Hammurabi about 1800 B.C. Our historical legacy also includes a rather long list of price ceilings on foods and other products imposed in the reign of Diocletian, emperor of declining Roman Empire. More recently, Americans have been offered the "protection" of a variety of price controls. Ceilings have been placed on some prices (such as energy) to protect buyers, while floors have been placed under other prices (such as farm products) to protect sellers. Many if not most of these measures were adopted in response to popular opinion, and there has been a great outcry from the affected sector whenever it was proposed that any such measure be weakened or eliminated.

Yet, every market sector affected by such price controls eventually has ended up in greater disarray than before. Thus, despite rent controls, rents in New York City have considerably more than doubled in the last ten years. Despite laws against ticket "scalping," tickets for popular shows and sports events sell at tremendous premiums—for example, $60 tickets to the 1984 Super Bowl reportedly were sold for prices as high as $500. Taxis cost much more in New York (where they are tightly regulated) than in Washington, D.C. (where they are not). The list of examples goes on and on.

Whenever lawmakers and regulators have been dissatisfied with the outcome of the operations of the market system, from Rome to Pennsylvania and from biblical times to the space age, they have been tempted to tinker with market forces. But the market has proven itself a formidable force that strongly resists attempts to circumvent its processes. In case after case where legal ceilings on prices have been imposed, virtually the same consequences have ensued:

1. In the short term, with prices held down, demand has been stimulated. More of the price-regulated items have been purchased (so long as they remained available).
2. In the long run, there has been a persistent shortage of the items whose prices are controlled. Queuing, direct rationing, and a variety of other devices, usually inefficient and unpleasant, have had to be substituted for the distribution process provided by the market.
3. Attempts to control prices have failed in industries with numerous suppliers, simply because the regulating agency cannot monitor the behavior of many sellers. Ways have been found to evade or to violate the law; and in the ensuing "black market" something akin to the free-market price has generally reemerged, but with one difference: since the evasion mechanism, whatever its form, entails some risks and operating costs, those costs must be borne by someone. That someone is the consumer.
4. Fears that a system of price controls will break down have invariably led to regulations designed to shore up the shaky edifice. Consumers have been told when and from whom they are permitted to buy. The powers of the police and the courts have been used to prevent the entry of new suppliers. Occasionally, an intricate system of market subdivision has been imposed, giving each class of firms its protected category of operations in which others are not permitted to compete. Milk marketing orders are one example. Laws banning conversion of rent-controlled apartments to condominiums are another.
5. To the extent that the controls have succeeded in constraining prices, they have also reduced the volume of the price-controlled product or service that is provided. Curiously, this has been so whether the regulated price was above or below the free-market price. When the imposed price is set above its market level, the quantity *demanded* will be below the equilibrium quantity. On the other hand, if the imposed price is set below the free-market level, the quantity *supplied* will be reduced. Because sales volume cannot exceed the lower of the quantity supplied or the quantity demanded, a reduction in the volume of product provided has frequently resulted.
6. Departures from free-market prices have often produced misuse of the economy's resources because the

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3. $2,000,000	$4,000,000
4. $3,000,000	$5,000,000
5. $4,000,000	$4,000,000
6. $5,000,000	$5,000,000

Claims-Made Extended Reporting Option (TAIL)

In the event of death, disability,* or retirement by the physician, no charge shall be made for this coverage provided that during the policy period:

A. death or total and permanent disability occurs; or

B. retirement takes place after the physician has reached the age of 55 and has been insured by us for the immediately preceding 10 years; age 56 and 9 years; age 57 and 8 years; age 58 and 7 years; age 59 and 6 years; age 60 and 5 years.

Antitrust Coverage

Antitrust coverage is provided for activity as a member of any committee, panel or board which provides peer review, provided that your activity is within the scope of the committee's, panel's or board's established guidelines. All other antitrust exposures are excluded.

Contractual Liability

Contractual liability protection includes liability assumed by contract with an HMO, PPO, IPA, or other similar organizations but only for such liability as is attributable to the CNA-insured physicians' negligence.

Employees: (Ancillary Personnel)

The following ancillary personnel may be added to the Corporation policy as additional insureds at no additional charge, provided that limits of liability are on a shared basis.

Audiologist
Medical Aide
R.N.
L.P.N.
Psychologist
Full Time Medical Student
O.R. Technician
Medical Laboratory Technician
Research PhD
Optometrist
Pharmacist
O.R. Technician
Physiotherapist
Dental Hygienist
Scrub Nurse
X-Ray Technician with/without Therapy

The following ancillary personnel may be added to the Corporation policy (individual physician's policy if no corporation policy) as additional named insureds for an additional premium. Limits of liability must equal those of the Corporation

(individual) and shall apply separately to each individual.

- Midwife
- Nurse Anesthetist
- Nurse Practitioner
- O.R. Technician
- Paramedic
- Physician Assistant
- Scrub Nurse
- Surgeon Assistant

New Physician Discount
Physicians new to the practice of medicine will be entitled to a 50% credit on their premium for the first year of practice.

Part-Time
Part-time physicians who are classified in the non-surgical classes (1A,1,2) may be eligible for a premium credit of 50%.

Partnerships and Corporations
It shall be possible to provide coverage for our insured's medical corporation or partnership for liability arising from the practice of medicine by the member physician(s), provided that the member physician(s) is insured by CNA:

A. When an individual physician is incorporated and sole shareholder, the corporation shall be covered as an additional insured, on the individual physician's policy, at no additional premium. Limits of liability shall be shared with the individual physician.

B. Coverage for a multi-member group shall be provided on a separate limits basis by issuing a separate policy naming the corporation/partnership. The limits of liability must equal those of the individual member physicians. An additional premium must be paid for this coverage.

Premium Billing:
Premium billing occurs in eight (8) equal installments with no finance charges.

AAW Physician Plans, Inc.

The CNA Professional Liability Program is administered in the state of Connecticut by AAW Physician Plans, Inc. (PPI). PPI is dedicated to working with medical professionals to provide the specialized services required to meet the individual needs of its clients. PPI achieves this goal by involving physicians in the development and implementation of insurance programs and the risk management process. They are directly involved in all aspects of the CNA Program such as; underwriting, risk assessment, coordination with County Medical Associations, claim review, and most importantly, providing the professional expertise to help clients obtain the right insurance, risk management, and financial programs to best satisfy their needs.

Physician Plans, Inc. was founded in 1980 by The Watson Group, the 55th largest insurance broker in the United States, and today is one of the leading administrators of professional liability insurance for physicians.

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*Definition of Permanent Disability
Totally and permanently disabled means that you have become so disabled as a result of injury or disease as to be wholly prevented from performing Clinical Medicine. Such a condition must have existed continuously for not less than six months and must be expected to be continuous and permanent.

> connection between production costs and prices has been broken. For example, shippers have used trucks or barges over some routes, even though the resource cost of rail transportation was lower, because artificial restrictions have forced the railroads to charge rates higher than they wanted to adopt. In addition, just as more complex locks lead to more sophisticated burglary tools, more complex regulations lead to the use of yet more resources for their avoidance. Additional work of little value to society has been created for executives, lawyers, accountants, and economists.

To summarize, governments have frequently been unable to resist the temptation to deal with problems involving high or rapidly rising prices by declaring them illegal, rather than facing up to the underlying problems that have caused the prices to rise, and taking whatever painful measures are required. But price controls are not merely a harmless aberration. Inevitably, they have unintended consequences that are typically substantial and serious, imposing heavy burdens upon consumers and the general public.

B. The Objections To Price Controls In The Medical Care Industry

What is true of price controls in general applies equally to their use as a cure for the "cost disease" problem of the medical care industry. Becuase of its labor-intensive character and because of the higher cost of new medical technology, the costs of medical care will continue to rise, despite any legal restrictions limiting the prices that doctors can charge. The cost disease, whose hallmark is continuous, cumulative, and unrelenting pressure in the direction of cost increases faster than those experienced in the economy as a whole, cannot be brought to a halt by any simple and obvious measures. Although particular doctors may be led to undertake economy campaigns, firing receptionists, or moving to lower-rent offices, such cost-saving measures represent one-time contributions to cost reduction. As an offset to cumulative cost pressures, such campaigns can be no more than cosmetic. These economy campaigns cannot be repeated indefinitely, and once carried out they can do nothing more to resist the continuing trend of cumulatively rising costs, which are the inexorable result of the "cost disease." Although economy measures may well be desirable in themselves, they have no relation to the underlying problem, and they are inherently powerless to bring it to an end.

As a result, a system of price ceilings upon Medicare fees will subject physicians to a cumulative squeeze. With fees fixed and costs rising, the outcome is predictable. The declining difference between receipts and costs will come out of the physicians' incomes. In effect, then, the proposed price ceilings are tantamount to a requirement that the doctors themselves provide a subsidy to offset the consequences of the cost disease. This "solution," in substance, is to shift the problem from the consumers of medical care to its suppliers. Apart from whatever doubts one may have about the equity of such a step, it is certain to backfire and to impose an enormous cost on society.

The case of rent controls illustrates the point. The periodic attempts to deal with rising costs of construction, maintenance, and operation of housing by shifting the burden of higher costs to landlords have repeatedly produced the predictable consequences: reductions in the amount of the available housing stocks and deterioration of the quality of housing. As one astute observer once remarked to me, "rent controls may not be quite as effective as aerial bombardment in destroying a city, but it is a very close call."

In the case of medical care, as in the case of housing stocks, all of the adverse effects will not be felt immediately. The number of persons planning a medical career probably will not immediately plummet; and the number of doctors in practice will manifest no immediate and precipitate decline. But in the long run, both the quantity and quality of entrants into the medical field will be significantly affected. Just as lagging salaries in elementary schools have produced shortages of teachers, particularly in fields such as the sciences where attractive alternative careers are available, restrictions that reduce doctors' incomes substantially and progressively will inhibit entry into medicine. Students looking forward to generating adequate incomes for themselves and their families will think twice before undertaking the long period of preparation, involving years of schooling and low-paid residency, that is required for a medical career. Entry into law schools and MBA programs will become relatively more attractive, and medical care will suffer commensurately.

This would be the end of the analysis if what were being proposed was a ceiling on *all* medical charges, not just those to Medicare patients. However, in the case of a selective ceiling such as the one here under consideration, the supply consequences are likely to emerge more quickly, and to damage those affected far more drastically. This is because the *partial* character of such controls leaves an alternative to the suppliers whose incomes are threatened. they can redirect the bulk of their practice activities to the areas in which the controls do not apply. If only those fees chargeable for treatment of the elderly are subject to controls, the natural reaction of physicians whose services are demanded most heavily will be to shift their efforts over time toward other categories of patients. Not all doctors will find it easy to do so, and not all of them will want to shift their practices in that direction. But in the aggregate, such a shift will clearly occur. Moreover, it will be a selective process of shifting, with the scarcest specializations and the doctors with the best reputations having the greatest opportunity to change the orientation of their practices.

Here again the distressing record of rent controls is instructive. Where cities have chosen to avoid *universal* controls and have instead elected to confine rent ceilings to the housing of particular groups, such as the poor, the adverse effects have been consistent and dramatic. In those communities whose economies were healthy, there was a boom in the construction of office space and luxury housing. Meanwhile, housing for the poor deteriorated drastically, and abandonment became the order of the day. Such partial controls also introduced a natural selection process into the choice of those who elected to specialize in housing for the less affluent families. This area of the housing market has tended to be left to the slum landlord.

C. A Counter-Argument—The Hypothesis That Doctors Are Self-Sacrificing Professionals

Those who advocate controls upon the pricing decisions of physicians derive support for their position from two contradictory claims about the moral propensities of members of the medical profession.

First, as we have seen, some advocates of price controls suggest that the problem of high (or rising) prices of physicians' services is ascribable to the avarice of the doctors. This suggestion is vital to support the logic of the proposed program of price controls, because unless rising medical prices are attributable to increasing physician profits rather than increasing real costs, government-imposed limits that restrict fees below their market levels will cut into the muscle, rather than just trimming away the fat. Stated another way, where there are no excess earnings, it is clear that restriction of revenues must lead to limitation of outlays on inputs, presumably inputs which make some contribution to the quantity or the quality of medical care. Such a result is plainly not the purpose of the proposed price control program, which is intended to result in the delivery of services at prices lower than that which would have prevailed otherwise, without loss in the quantity or the value of the services provided. The intended result clearly cannot be achieved if there exists no "excess" of physician incomes out of which the expenditure cuts can be extracted.

This argument in support of medical price controls fails for another reason: it is based on a static view of the cost disease problem. The price control proposals require not only the availability of a surplus in doctors' incomes out of which price reductions can be extracted without damage to medical care, but also that over time *growing* amounts can be taken out of this supposed surplus. This increase in the amount to be extracted from physicians as a group is necessary in order to put a permanent halt to the *continuing* rise in prices which persistently rising medical care costs would otherwise require.

Yet, while one group of advocates of price controls relies upon the assumed selfishness and avarice of physicians as a foundation of their argument, a second group of supporters of price controls relies on the contrary assumption. When it is pointed out that lower physician incomes will mean fewer doctors, these proponents of price regulation eloquently conjure up the vision of doctors as a selfless group, so dedicated to the welfare of humanity that they can be counted upon to persist in providing medical services whatever personal sacrifices in income may be entailed.

The hypothesis that the medical profession is composed, to a greater degree than other professions and areas of employment, of morally superior beings conflicts with the evidence. Doctors do not appear, in this respect, to be consistently different from businesspersons, lawyers, or professors. Lawyers as a group may be the bastions of the rule of law and individual freedoms in our society; and some may even be saintly in their dedication to the social welfare. But the legal profession obviously also contains its share of fallible and markedly human beings who are not immune from profit incentives that affect the ways they choose to spend their time. The same can be said of professors, and of any other profession that entails some element of dedication to the general welfare.

It follows that the assumption that doctors will not withdraw their services from care of the elderly when relative income in this area is restricted is little more than a hope supported by a very slender reed. Although there are no doubt a few saintly physicians who will not let their conduct be affected by the change in relative earnings, others will gradually react quite differently. Some will be driven by urgent family needs or other financial pressures, and some may react to such incentives almost without realizing it. At least some among those entering the profession will be influenced in their choice of specializations by the differences in earnings opportunities imposed by price controls.

This conclusion is not based solely on common sense and general reasoning. Clear empirical evidence supports the proposition that suppliers of particular physician services expand and contract along with the relative income opportunities they offer, and that doctors as a group do seek out opportunities that offer enhancement of their incomes. The most obvious evidence is the "brain drain"—the considerable number of foreign physicians, particularly those from low-income countries, who have chosen to supply their services in this country. This is clear evidence that the willingness of doctors to move to where better incomes can be found is no mere theoretical possibility.

Formal studies confirm this conclusion. One study based on interviews of 685 doctors who had migrated to the U.S. from other countries (Stevens, R. Goodman, L.W. and Mick, S.S., *Alien Doctors: Foreign Medical Graduates in the U.S. Hospitals,* New York: John Wiley & Sons, 1978, Ch. 3) reports that 66% of its sample group identified higher U.S. salaries as a prime incentive for migration. Almost 80% of British doctors in the sample gave this reason.

Another investigation conducted by MATHEMATICA for the U.S. Department of Health, Education and Welfare (*Responses of Canadian Physicians to the Introduction of Universal Medical Care,* Washington, D.C., February 1980) showed that physicians had moved in substantial numbers to geographic areas characterized by relatively high fees as a result of relative sparsity in the supply of physicians.

A further study, a very sophisticated econometric analysis, has dealt with the issue even more directly. (See F. Sloan, J. Mitchell, and J. Cromwell, "Physician Participation in State Medicaid Programs," *The Journal of Human Resources,* vol. 13, Supplement, 1978, pp. 211-245; see also H. Luft, "Determinants of the Flow of Physicians to the United States," Santa Monica: The Rand Corporation, 1970.) The authors of this study conclude: "States offering meager fee schedules in an attempt to economize on program expenditures must expect to pay the price in terms of substantial reductions in physician cooperation with the program. Assertions by organized medicine and individual physicians to the effect that Medicaid reimbursement levels affect physician participation tend to be self-serving. Hence, external validation of the claims is desirable. This study presents the first empirical evidence directly linking Medicaid reimbursement levels to physician participation in this program. Our evidence on fee schedule effect is consistent with other research."

The conclusion from this and other evidence is clear. Those who propose to "solve" the problem of rising medical care prices by means of legislative or regulatory fiat must be prepared for the fact that the increased costs of providing medical care will have to be paid. Those costs must be paid by someone—either the consumers of services, the providers of services, or the government. Requiring the providers—the doctors—to pay the cost out of their incomes would ensure that fewer people would become doctors and fewer doctors would care for the elderly. Thus, the real burden of this proposal would be borne, not by its advocates, but by those whose interests they intend to protect. It is the elderly themselves who will surely suffer the consequences, in the form of reduced medical services and services of poorer quality.

Conclusion

The seriousness of the underlying problem of rising medical prices is difficult to exaggerate. But the problem is not ascribable to increasing avarice or market power on the part of doctors. Thus, popular assumptions about the role of profit-oriented motivations of doctors as a group offer no logical basis for an explanation of the problem of rising prices, and certainly provide no rational basis for policy dealing with this problem. Indeed, such arguments lead away from rational approaches to the problem because they fail completely in dealing with the dynamics that constitute the heart of the real problem—the persistence of the *rising cost* of providing medical care.

Far from constituting a solution to this problem, price controls represent an additional threat to the general welfare, and to the welfare of the elderly in particular. It is difficult to think of a measure that threatens to be more damaging over the long run to the medical care services provided to the elderly.

The design of a program to grapple rationally with the "cost disease" problem is well beyond the scope of this report, and requires an extensive and thorough study of its own. But it may not be premature to suggest in a preliminary way some lines along which effective mitigation of the cost disease problem may be sought. At least three such directions suggest themselves:

1. *Anticipatory budgeting.* The cost disease is hardly a new phenomenon, and there is enough information available to permit rough but reasonably reliable prediction of its future course. This means that rather than planning budgets for programs such as Medicare and Medicaid on the basis of the current costs of medical services, policy makers and other insurers should project the future costs to be covered as well, and rescale the funding arrangements accordingly. Plans are already underway for private programs that undertake such an approach to the funding of college tuitions for individual students of the future; and the problems here are not dissimilar to those of medical care since education is also subject to the cost disease.

2. *Systematic cost sharing, with enhanced user fees.* It may be helpful to build into government-funded medical programs an arrangement under which patients (except for the relatively needy) are required to bear a larger proportion of the expenses (today, after the patient pays a small deductible, Medicare is supposed to cover 80% of the doctor's fees and the patient is expected to pay 20%, plus any balance not otherwise covered). Such an enhanced user sharing arrangement would provide a greater incentive for patients to shop around, to provide demand-side pressures that impede excessive charges, and would also help to curb unnecessary use of medical facilities.

3. *Funding of research related to cost-saving innovation.* There may be areas of medical practice that are not incompatible with some degree of automation and labor saving. For example, illnesses whose range of symptoms are fairly narrow may lend themselves to computerized diagnosis which perhaps can be carried out in a way that requires the reduced expenditure of time by doctors. There may also be opportunities for expansion of automated patient care arrangements, operated by computer, which monitor heartbeat, blood pressure, breathing, and other manifestations of physical condition and which can both make automated medication decisions and administer them automatically, all under the eye of a doctor in a central control room where alarming developments are automatically reported. My purpose, of course, is not to lay out the details of such technology, but to suggest the possibility of expanded research funding explicitly directed toward improving productivity and reducing the amount of time and other resources used up in medical care activities.

The possibility that the cost disease may not be completely remediable by such measures is not itself a reason for deep gloom. Viewed broadly from the perspective of the economy as a whole, rather than just such areas as medical care, education, urban services, and the performing arts where its effects are most immediately felt, the cost disease must be considered to be a benign manifestation. The cost disease, after all, is merely the other face of the economy's overall productivity growth. Relative medical costs rise in part because crude productivity growth in medical care has not been able to stay abreast of that in manufacturing and agriculture (and in part because the medical care we receive is of higher quality because of improved technology, which must be paid for). An economy in which productivity is growing in virtually every arena—some places slowly, some places rapidly—is becoming wealthier, not poorer. Rising productivity offers consumers the ability to acquire more of *every* product, even those afflicted with the cost disease. The public today can and does receive more medical care and education (as well as cars, TV sets, and food) than it ever received before. Recognition of this fact shows that control of the cost disease is by no means an impossible undertaking. In the last analysis, what it requires is a viable means to put an appropriate reordering of priorities into practice.

Whatever long-term solutions may be developed, it is essential that all those who are concerned with this problem pledge themselves to undertake serious steps to deal with this issue. In doing so, they should not lose sight of three pertinent considerations: the technological character of the cost disease; the fact that this very real problem does *not* affect only the elderly, but instead falls on *all* people, particularly the poor; and the fact that any public program that claims to solve this problem at no cost to the public or to consumers is almost certainly a fraud, whether deliberate or inadvertent.

Whether or not we are ultimately successful in alleviating the problem of increasing medical prices for our Nation's poor, it is essential that in the meantime we not make the problem far worse—through a purported solution that would inevitably have a seriously detrimental effect on the amount and quality of physicians' services to the elderly.

(This is the second of a series of two articles.)

Appendix A

Examples Of Quality-Enhancing And Cost-Increasing Medical Techniques

I. *Nuclear Magnetic Resonance*. Magnetic Resonance (MR) is a highly effective and safe diagnostic imaging technique. MR is superior to other diagnostic methods because of its ability to delineate abnormalities more effectively than other methods while exposing the patient to very little risk.

II. *Intensive Care Units.* Intensive Care Units (ICUs) combine in one location staffing and equipment in internal medicine, surgery, pediatrics, anesthesiology, and other areas of critical care. ICUs lead to an increase in survival and a decrease in mortality.

III. *Electronic Fetal Monitoring.* Electronic Fetal Monitoring (EFM) is a technological step beyond the stethoscope for monitoring the heart rate of the fetus during labor and delivery. EFM is very expensive, but improves the ability to detect certain types of abnormal patterns.

IV. *Apheresis.* Apheresis cleanses the blood of elements apparently involved with disease and returns the rest, using sophisticated equipment for the purpose.

V. *Brain Electrical Activity Mapping.* Brain Electrical Activity Mapping (BEAM) makes remarkable colored pictures of brain activity in the form of topographical maps. It is used for diagraming and evaluating a wide variety of brain diseases.

Sources for Figures

Figure 1. Physician-Population Ratio, 1880-1981.

Source: Monica Noether, Federal Trade Commission, "The Growing Supply of Physicians: Has the Market Become More Competitive?" *Journal of Labor Economics,* vol. 4, no. 4, 1986, p. 506.

Figure 2. Active Physicians per 100,000 U.S. Population, 1900 to 1990.

Source: *1900-45 Historical Statistics of the U.S., Colonial Times to 1970,* and *The Demographics of Physician Supply: Trends and Projections* (AMA 1987).

Figure 3. Number of U.S. Medical School Graduates, 1960 to 1985.

Source: Selected Issues *Journal of the American Medical Association,* Medical Education Issues.

Figure 4. Number of HMOs, June 1970 to December 1985.

Source: Interstudy, National HMO Census, 1985.

Figure 5. Growth in HMO Enrollment, June 1970 to December 1985.

Source: Interstudy, National HMO Census, 1985.

Figure 6. Nominal and Real Net Physician Income, 1975 to 1985.

Source: AMA Center for Health Policy Research, "Socioeconomic Characteristics of Medical Practice, 1986," p. 17.

Figure 7. Physician Income-Opportunity Cost Ratio, 1946-1982.

Source: Monica Noether, Federal Trade Commission, "The Growing Supply of Physicians: Has the Market Become More Competitive?" *Journal of Labor Economics,* vol. 4, no. 4, 1986, p. 509.

Figure 8. Cost Indicies for Three Activities, 1947-1986, Several Missing Data Points Interpolated.

Sources: 1. Cost per Doctor Visit: SMA and PSP surveys, and Bureau of Labor Statistics Consumer Price Index for general practitioners' office visits.

2. Cost per Patient Day: Bureau of the Census, *Statistical Abstract of the United States,* various years.

3. Cost of Education per Pupil Day: 1947-67 data from D.F. Bradford, R.A. Malt and W.E. Oates, "The Rising cost of Local Public Service: Some Evidence and Reflections," *National Tax Journal,* June 1969, p. 190. More recent data from U.S. Department of Education, *Digest of Education Statistics 1987.*

Note: For cost per patient day and cost of education several figures were estimated by interpolation (extrapolation).

Figure 9. Poverty Rate, Persons 65 Years and Over, 1970-1985.

Source: Current Population Reports, Series P-60, No. 154.

Figure 10: Median Income 1970-1986, Elderly vs. All People.

Source: U.S. Bureau of Census, Current Population Reports, Series P-60, No. 14; CPI: U.S. Department of Education, National Center for Education Statistics, THE CONDITION OF EDUCATION, 1986.

Note: 1971 and 1978 data are interpolated.

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Dosage and Administration: Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

How Supplied: Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

References:
1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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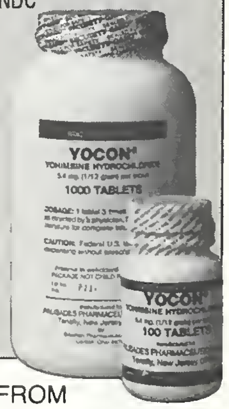

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Burden of Biomedical Waste Disposal to Be Placed on Physicians

MICHAEL H. SINGER, ESQ. AND STUART G. WARNER, ESQ.

Beginning on 1 October 1988, a new law will take effect in Connecticut that will place new regulatory burdens on any person who owns or operates a medical office or other facility producing any amount of biomedical waste. The broad reach of this new law means that virtually all physicians and allied health professionals will feel its effect. The law will require facilities and offices that generate biomedical waste to begin separating such waste from their regular trash so that it may be both safely disposed of and tracked to its disposal site by the State Department of Environmental Protection (DEP). This regulatory surveillance will be accomplished through an ongoing reporting requirement.

The new statute, known as Public Act 88-341, was signed by the Governor in June and expands upon certain definitions and provisions in the prior Solid Waste Management law (appearing at § 22a-207 of the Connecticut General Statutes). In addition to restating certain parts of the prior section, Public Act 88-341 adds a distinct category of "biomedical waste" to the preexisting categories of solid waste. The new statute broadly defines biomedical waste to encompass virtually any untreated waste resulting from medical care, as follows:

> [U]ntreated solid waste generated during the administration of medical care or the performance of medical research involving humans or animals and which, because of its quantity, character or composition, has been determined by the Commissioner to require special handling, including infectious waste, pathological waste, and chemotherapy waste, but excluding any solid waste which has been classified by the Department as a hazardous waste pursuant to § 22a-115 or as a radioactive material regulated pursuant to § 22a-148.

Subsection two of the Act then sets forth the reporting requirements for hospitals producing such waste, stating:

> Each hospital shall submit to the Commissioner of Environmental Protection, in writing, the name of the person said hospital has contracted with to dispose of its biomedical waste, the amount of such waste and the site of disposal.

According to the DEP, a similar ongoing reporting requirement will also be applied to all other "generators of biomedical waste" mentioned in the statute once new regulations are drafted. Included in the statute's definition of "generators of biomedical waste" are the following: "general hospitals, skilled nursing facilities or convalescent hospitals, intermediate care facilities, in-patient care facilities for the developmentally disabled, chronic dialysis clinics, free clinics, health maintenance organizations, surgical clinics, acute psychiatric hospitals, laboratories, medical buildings, physicians offices, veterinarians, dental offices, and funeral homes."

Under the anticipated regulations, the notification to the DEP by these facilities will be required each time the generator sends out its biomedical waste for disposal, even if it is on a daily basis. The regulations are likely to incorporate a manifest system for tracking waste disposal that will use a multipart form, a portion of which will be sent to the DEP. The DEP is currently in the process of drafting these regulations and hopes that they will be ready for publication by November or December 1988. It is likely that these new regulations will specify different waste disposal requirements for each of the three categories of biomedical waste (i.e., infectious, pathological, and chemotherapy waste) mentioned in the statute.

Because the express language of the statute requires only hospitals to notify the DEP of their waste-disposal contractors, the Act itself will affect only hospitals when it becomes effective on 1 October 1988. The reporting requirements for other waste generators will take effect after the new regulations are announced, a public hearing process is completed, and final regulations are adopted. We are advised that this should occur by early 1989.

According to the DEP, this Act was created initially to close a loophole in the solid waste management law that authorized regulation only of plants processing extremely large amounts of waste.

The prior law had governed "solid waste facilities" and "volume reduction plants," which were defined as follows:

> "Solid waste facility" means any solid waste disposal area, volume reduction plant or resource recovery facility operated by any municipal or regional authority or any person if such area, plant or facility handles more than five tons a year of solid waste;
>
> "Volume reduction plant" means a plant having the capacity to process in excess of two thousand pounds per hour of waste material input, which plant is designed primarily for the purpose of reducing the volume of solid waste which must finally be disposed of, including but

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MICHAEL H. SINGER, ESQ. is the coordinator of Cummings & Lockwood's Health Law Services Group, Stamford, CT and STUART G. WARNER, ESQ. is an associate in Cummings & Lockwood's Health Law Services Group.

> not limited to incinerators, pulverizers, compactors, shredding and baling plants, transfer stations, and compost plants or other plants which accept and process refuse for recycling, reuse and resource recovery.

While these types of facilities are still subject to regulation under the new Act, medical waste is generally produced and processed in much lower volumes than the waste contemplated by the old law. Thus, despite the recognized concerns over the management of medical waste, companies handling only biomedical waste products were in effect exempted from any statutory and regulatory requirements. As a remedy, the new law defines a new type of solid waste facility called a "biomedical waste treatment facility." This definition encompasses any solid waste facility which handles *any amount* of biomedical waste, thus creating a framework for regulating all companies processing biomedical waste.

Like other solid waste plants, these new biomedical waste treatment facilities will be required to have permits and to follow a variety of other regulatory requirements. However, facilities that treat, store, or dispose of biomedical waste generated exclusively on-site are excluded from the definition of "biomedical waste treatment facility." Therefore, hospitals treating waste produced on-site will not need permits to operate their treatment facilities, unless they also provide the service for others. For example, any hospital that processes such waste for members of its medical staff or even for related nonhospital ventures would appear to fall within the definitions of an entity subject to regulation.

This Act is hardly a model of clarity in legislative draftsmanship, and its ultimate impact and scope will not be known until the final regulations become effective. If Connecticut follows initiatives being introduced in New York and New Jersey, we anticipate that increasingly the burden will be placed on physicians, hospitals, and other health care providers to assure and assume the risk of the safe and lawful disposal of the biomedical waste they generate. Clearly, both by tracking all biomedical waste disposal and by increasing the regulation imposed on companies in the biomedical waste disposal business, the effect of the Act will be to alter greatly the waste disposal practices of most medical practitioners and facilities in Connecticut by 1989.

Several Gender Differences Revealed Among Freshman Medical Students

Last fall for the first time, the AAMC's Matriculating Student Questionnaire was completed by medical school freshmen; 82 percent responded (see *Weekly Report* June 9). Although the responses of the 4,742 women and 8,323 men present very similar profiles overall, they reveal some predictable but interesting differences.

The women are slightly older than the men, with 16 percent compared to 11 percent born before 1960. Women tended more often than men to make their decision to study medicine either before high school (24% vs. 18%) or after receiving their bachelor's or advanced degree (17% vs. 11%). The women indicated less parental support for their decision to study medicine than the men; 69 percent women and 76 percent men reported their fathers were strongly in favor and 74 percent women and 80 percent men reported their mothers were strongly in favor of their decision. This finding may partially explain why 61 percent of women versus 70 percent of men say they are very confident in their ability to succeed in medical school.

Mean parental income was $66,627 for women and $74,167 for men students; this may in part account for the women arriving in medical school with higher debt (mean debt of indebted respondents: $14,462 for women and $10,699 for men).

In general women revealed a greater interest than men in the people-oriented and prevention-related aspects of medicine. For example, 57 percent of women and 51 percent of men rated "helping people" as the most important factor in choosing medicine, and 43 percent of women and 32 percent of men rated "working with patients to prevent illness" as the most important physician service.

Asked of plans to practice in a socioeconomically deprived area, 20 percent of the women and 12 percent of the men responded affirmatively. With regard to planned specialty choice, women showed a greater preference for family medicine, obstetrics and gynecology and pediatrics; men preferred orthopedic surgery.

Somewhat surprisingly, fewer women said they believe that the demands of a physician's work interfere too much with family relations (57% vs. 61%) or with other interests and pursuits (45% vs. 49%). One-third of women and 23 percent of men described their political orientation as liberal.

(For more information, contact Janet Bickel, Division of Institutional Planning and Development, 202-828-0575 or Diane Lindley, Division of Academic Affairs, 202-828-0575.)

— Association of American Medical Colleges Weekly Report, July 28, 1988.

Hepatitis A Among Drug Abusers

CENTERS FOR DISEASE CONTROL

OVER the past several years, CDC has received an increasing number of reports of hepatitis A outbreaks involving drug abusers. These outbreaks have occurred in many areas of the United States, including Alaska, Oregon, Washington State, northern and southern California, Oklahoma, upstate New York, and Connecticut. A variety of drugs have been used: in Oregon, northern California, and Oklahoma, intravenous (IV) amphetamines have been most commonly implicated; in one locality in southern California, a new form of heroin, referred to as "black tar" because of its color and consistency, has been linked with transmission; in upstate New York, IV cocaine has been the primary drug. In several areas, cases have occurred among people who only smoked marijuana. Outbreaks in upstate New York and northern California and data from the Viral Hepatitis Surveillance Program (VHSP)* are summarized below to illustrate this trend.

Upstate New York

Since December 1, 1986, hepatitis A outbreaks predominantly involving drug abusers have been reported in Monroe, Cortland, Onondaga, and Chemung counties in upstate New York. In Monroe County, 87 cases of physician-diagnosed hepatitis A were reported to local health authorities between December 1, 1986, and May 31, 1987. An average of nine cases had been reported for the same period of the previous two years. Twenty-four (28%) of these patients were IV drug abusers without other identifiable risk factors for hepatitis A. Eight additional patients were sexual or houshold contacts of these 24 patients. Information about the specific drugs used was not available for all patients; however, local drug enforcement officials believe that cocaine is the primary drug used intravenously in Monroe County.

Thirty-eight cases of hepatitis A occurred in Cortland County in 1987. Twenty-two (58%) of the patients were known or suspected drug abusers. Eleven of these cases occurred between March 25 and April 18. About one month before becoming ill, these 11 patients had attended two different social gatherings at which seven of them had used IV cocaine and shared needles. No food was consumed nor were beverages shared at these gatherings, and no other risk factors for hepatitis A could be identified.

Increases in hepatitis A also occurred in Onondaga and Chemung Counties during 1987. Fifty (38%) of the 131 cases of hepatitis A in Onondaga County in 1987 were among known or suspected drug abusers; 70% of the 50 patients used only IV cocaine. Thirteen cases occurred between October and December in Chemung County. Four (31%) of these patients were drug abusers; all used IV cocaine only. Anecdotal information suggested that drug abusers in Chemung County had recently obtained cocaine from persons in Onondaga County.

Northern California

In June 1987, an outbreak of hepatitis A among patrons of a restaurant in a northern California county was reported to local health authorities. Investigation revealed that a restaurant cook with a history of IV drug abuse had been diagnosed with hepatitis A several weeks earlier. A review of all serologically confirmed cases of hepatitis A in the county between January 1 and June 30, 1987, was subsequently conducted. Thirty (42%) of the 71 cases identified were associated with the foodborne outbreak originating at the restaurant. Thirty-three of the remaining 41 patients were contacted either directly or through friends or family. Twenty four (73%) of these 33 patients were IV drug abusers and did not have other risk factors for hepatitis A. Eleven (46%) of the IV drug abusers were male; all were white; and they ranged from 21 to 39 years of age. Twelve of the drug abusers admitted to IV drug use with within six weeks before onset of hepatitis A. All twelve had injected "crank" (an amphetamine derivative). Twelve of the IV drug abusers admitted to either casual or intimate contact or sharing needles or drug paraphernalia with at least one other IV drug abuser who contacted hepatitis A during the same period.

Viral Hepatitis Surveillance Program

Data from VHSP indicate an increasing association between drug abuse and hepatitis A in the United States. Between 1982 and 1986, the percentage of persons with

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* A nationwide reporting system in which patients serologically confirmed to have hepatitis A are interviewed to identify probable sources of illness.

Morbidity and Mortality Weekly Reports, Vol. 37, No. 19, 1988

hepatitis A who admitted to previous IV drug use rose steadily from 4% to 19%. During this period, overall hepatitis A rates were relatively constant, and the proportion of patients with hepatitis A who had other identifiable risk factors remained stable. It should be noted, however, that only one-third of patients reported to the *MMWR* Morbidity Surveillance System were interviewed through VHSP and that only a modest proportion of such persons are routinely asked about IV or other drug use.

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Editorial Note: In the United States, transmission of hepatitis A has traditionally been associated with crowding, poor personal hygiene, improper sanitation, and, less commonly, contamination of food or water. Recognized risk factors include intimate or close contact with persons with hepatitis A, foreign travel to developing countries, and contact with children in day-care centers.

The association of drug use and hepatitis A has been recognized only recently. Well-documented outbreaks of hepatitis A among drug abusers have been reported in Scandinavian countries.[1,2] In seroprevalence studies of antibodies against hepatitis A virus (HAV) in Denmark, drug abusers have had antibody rates four times those of the general population.[3]

Two possible explanations for the association between hepatitis A and drug use have been proposed: 1) HAV may be transmitted by injection or ingestion[†] of contaminated drugs (common-source spread), or 2) transmission may result from direct person-to-person contact. The culture of fecal coliforms from marijuana confiscated during one investigation (Alaska Department of Health and Social Services, unpublished data) raises the possibility that direct contamination of drugs could be a factor in some of these outbreaks.[§] Drugs could become contaminated with fecal material containing HAV at the cultivation site (e.g., through use of human feces as fertilizer) or during transport, preparation, or distribution (e.g., through smuggling in condoms concealed in the rectum[4] or in baby diapers). However, the pattern of occurrence of the cases by dates of onset in each of the outbreaks and the diversity of drugs involved argue against a single common-source mode of transmission. Nevertheless, sustained common-source transmission is possible if contaminated drugs were distributed among persons who then used them at different times.

Person-to-person transmission of HAV between drug abusers could result from sharing needles, from sexual contact, or from generally poor sanitary and personal hygiene conditions, which have often been observed among drug abusers. Isolated instances of bloodborne transmission resulting from transfusions from donors who had given blood during the incubation period of viral infection have been reported. Due to the relatively short viremic phase of HAV infection, however, bloodborne transmission through needle-sharing is unlikely to have sustained large outbreaks such as those reported here, although it may have accounted for one cluster in Cortland County.

Investigations of the various outbreaks to date have not revealed clear modes of transmission. It is possible that each outbreak has multiple modes of transmission. Physicians and public health authorities are strongly urged to identify and investigate hepatitis outbreaks among drug abusers. Clinicians evaluating persons with a history of drug use for viral hepatitis should obtain serologic tests for both hepatitis A and B. Public health officials should ask persons with hepatitis A about drug use and include such information on the VHSP questionaires. Control measures include the use of good sanitation and personal hygiene and the administration of immune globulin to contacts of patients within two weeks of exposure. Factors operating in communities of drug abusers, such as poor hygienic conditions and transience as well as the relatively poor responsiveness of such groups to education and preventive efforts, make outbreaks among these groups difficult to control. Consequently, drug abusers may be candidates for the vaccines against HAV that are currently being developed.[5,6]

[†] By tasting the drug to assess quality, for example.

[§] HAV could not, however, be isolated from the marijuana by tissue culture (CDC, unpublished data).

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News of M.D. Health Plan

ROBERT J. BRUNELL

MDHP to Ease Participation Rules

Now that M.D. Health Plan is licensed and operating, the Plan can develop creative alternatives for needed physician participation and the required ownership of one share of Class B and three shares of Class A voting stock, subject to necessary regulatory approval.

The new plan will satisfy several issues that have been raised by nonparticipating physicians. First, it attempts to provide more payment options to physicians. There would now remain no financial reason for not supporting the Plan.

Secondly, those physicians previously critical of the statewide aspects of CSMS-IPA have an opportunity to work through their local organizations. For example, Hartford County Medical Association's "MDS" organization is the first county-wide physician group to consider functioning as a County IPA Chapter for CSMS-IPA, assuring local physicians direct input and feedback. Arrangements are being made with local and county IPAs elsewhere in the state as well.

Further, the plan is designed to be acceptable to stock regulatory authorities, lending institutions, and the Insurance Department. Finally, it addresses the objective of increasing physician participation to enhance marketability, while attaining the capital commitments needed to operate until breakeven and providing additional funding for new ventures. Watch for detailed information from the Company.

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Another First for M.D. Health Plan

With much attention and disclosure having been given recently to financial arrangements, CSMS physicians may not realize that their M.D. Health Plan is developing rapidly, and can already boast of several "Firsts" among HMOs in Connecticut. Your M.D. Health Plan is on the cutting edge of change in the HMO industry even nationwide, doing things *now* that others are only thinking about.

"ChoicePlan"

M.D. Enterprises of Connecticut, parent company of MDHP, has formed a unique and innovative joint venture relationship with Stirling and Stirling, a major third party benefit administrator (TPA), to offer *ChoicePlan,* the *first* statewide employer self-funded, managed care cost containment program in the country. With the cooperation CSMS-IPA, we have put employers and doctors together for the first time in a venture to offer medically appropriate quality care as judged by the patients own physicians, not an insurance company. This innovative plan breaks new ground in offering a physician-managed health option at the "point of service" integrating indemnity coverage with significantly better benefits when employees choose to use the network.

Since the recent news of HMOs, particularly in Connecticut, has been anything but encouraging, it is important to realize that M.D. Health Plan is NOT just another faceless HMO. It is what it was designed to be—a special identity—and controlled only by physicians. It is breaking new ground, and its growth is on target—past the 6,000 mark already—in spite of the bad press that other HMOs here have been getting.

Given success in the coming enrollment, it appears that CSMS, its counties, and its physicians will have scored another achievement, just as with CMIC, now worth nearly $100 million. Doctors really can do much for themselves and their patients, if enough of them stick together.

ROBERT J. BRUNELL, M.A., Director of Scientific Activities, Connecticut State Medical Society.

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Editorials

Guest Editorials

Physicians Don't Need More Enemies

When Professor William Hsiao of the Harvard School of the Public Health presented a two-day preview of his resourse-based relative value scale (RBRVS) to a distinguished audience of physicians, bureaucrats, and academics in late March, there was much to marvel at. He had succeeded in eliciting and, more remarkable, in retaining the active cooperation of the American Medical Association and most of the larger specialty societies. Even the American College of Surgeons had been mollified to the point of sending an observer. The radiologists alone had broken ranks and made a "private deal" with the key congressional committees, but even they sent a representative to listen and explain if not to apologize.

The efforts of the federal government to establish a fee schedule for physicians who treat Medicare patients may be attributed to a variety of forces, some recent, others more distant. To note a few:

- The increasing restiveness of Congress with the accelerating costs of Medicare Part B (physician payment)—the most steeply rising item in the federal budget;
- Repeated public opinion polls suggesting the widespread belief that physicians earn too much;
- The long campaign waged by the American Society of Internal Medicine with belated assistance from other professional organizations attacking the preference for "procedurists" and advocating revision of the fee schedules in favor of those whose work is primarily "cognitive," a term that has since been banished from the RVS study itself.

The Outlook

Dr. Paul Ginsberg, the executive director of the Physician Payment Reform Commission (PhysPRC), which has responsibility for recommending changes in the existing fee schedule to Congress, noted that the commission would review carefully the Hsiao proposals in its report scheduled for July; at this time, however, it is not committed to accepting an RBRVS.

In my role as rapporteur, I sought to broaden the audience's perspective by emphasizing that Congress faces a serious dilemma. It has good and sufficient reasons to explore what might be done to slow the growth of Medicare expenditures. One need only recall that instead of covering half the costs of Medicare Part B (physician services), beneficiaries' premiums now pay for only 25% And the remaining 75% that is covered by the federal government is a wild card in an out-of-control federal budget.

In my opinion, many nonprocedurists are in for a rude awakening. Even if the Lee Commission were to decide in favor of Hsiao's proposal RVS, or some variant, it is unlikely that the new fee schedule would result in much more than a 10% (15%, at most) shift in the earnings that different groups of physicians receive for treating Medicare patients. We don't look to Congress to correct the errors, if errors they be, of history or the marketplace.

The point that I stressed above all was the danger incurred by the radiologists' striking out to make an independent deal with congressional committees. The American public is ambivalent about its health care system. It approves of many elements, accepts others grudgingly and is critical—in fact highly critical—about the steady acceleration in costs with no slowing in view. The polls have reported for many years that the public's opinion of physicians in general, and their personal physicians in particular, is less positive than it used to be. Part of the explanation for this loss of professional status and esteem stems from the belief that physicians earn too much.

Hold Ranks

Some physicians are deeply concerned about the many changes that are affecting the way in which they are able to practice, the quality of care that they can render and the steadily mounting interference of third party payers and administrators. On these issues they are sorely in need of allies. They cannot hope to find such allies among the employers who pay a large part of their bills or among legislators and government bureaucrats who are working overtime to stem the finanacial hemorrhage.

Their only prospect of reversing the tide is to hold ranks: to speak out loud and clear for the values and goals that they cherish. To succeed, they need to align themselves with their patients and their patients' interests and concerns. Nothing will contribute more to a further loss of respect and authority by the medical profession than dissension among the specialty and subspecialty groups on the matter of fees.

The profession may suffer losses even if it holds ranks, but it runs greater risks if the American people are treated to ringside seats at a bruising battle between those who seek to protect their fees and those who relentlessly see increases.

Eli Ginzberg, PhD

Dr. Ginzberg is director of the Conservation of Human Resources at Columbia University.

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Allowing the Dying to Die

(Editor's Note: Dr. H. Robert Silverstein of Hartford has offered these two articles, written earlier for other publications, to *Connecticut Medicine* in response to Joseph M. Healey's "'It's Over Debbie': Active Euthanasia: Lessons from the President's Commission," which appeared in the July 1988 issue.)

Many physicians believe that if human beings did virtually everything they are supposed to do to stay as healthy as possible, with a little bit of luck they would live out their lives virtually disease-free and would fulfill their genetic capabilities for longevity.

Of course, the "clock" would eventually begin to run down toward the end of the normal life span, and the person would die. There is little question that a human being is not likely to survive until age 200. Somewhere beyond age 70 is considered likely today, and most of the avant garde in medicine believe that 110 to 150 years is probably the maximum human genetic capability for life expectancy.

However, we are not all breathing, drinking, eating, exercising, and making proper agreements as we should. Some of us do have health problems or may experience life-limiting accidents, and chance encounters with potent diseases do exist. As a result, we all may not fulfill our full genetic complement of years. Hence, the issue of untimely death is very real to all of us and, in particular, to physicians.

Traditionally, physicians have borne the brunt of making the fateful decision as to which patient should go on living, though in need of temporary help, and which patient, though artificially supported, is in an irreversible process of dying. The whole "ethical" issue of whether to continue or to terminate life-support systems, therefore, has focused on the doctor's ability to distinguish, with adequate certainty, between those who may live on and those who are clearly dying.

Unfortunately, we are living in a period of medical care luxury. In wartime or during a natural disaster, triage is carried out automatically, without introspection. However, in the absence of any overwhelming demands on the health care delivery system, we make blanket efforts to support as many lives as we can. Some patients obviously do not make it, but many others who should be allowed to die are not let go in a timely fashion.

No one is perfect, and none of us is God. As physicians, we have made, and will continue to make, mistakes. But the issue is one of choice as to who should live and who should die, and everyone has interests in the decision. Sometimes the interests—representing religion, the law, medicine, the family, business, and, of course, the patient—conflict.

Unfortunately, medicine has allowed itself to become confused and to take on the demeanor of a follower. We have become afraid of the law and of our responsiblities. can automatically make the right decision—immune from criticism. But how many times have we seen those patients, I'm not so foolhardy as to imagine that we who we know are about to die, continue to receive life support because another physician, in his discussions with the family, made it seem as if there were an acceptable chance for survival and recovery? How often have we heard "we should do everything we possibly can"?

It's sometimes difficult to differentiate the living from the nearly dead or dying, but it's a decision for which we're responsible. It's time to take this decision-making process back from the courts—without self-immolation.

Our own interests and our lack of courage have made us all afraid to pull the plug, turn off the switch, disconnect the respirator, stop dialysis, pull the feeding tube, or, for that matter, even discuss these possibilities with the patient's family as we should.

There may be a fine line crossed by those who seem too eager to end the "suffering," but most of the people who have been accused of euthanasia, both physicians, and the public, have acted only out of humanitarian interest. Life or death in the absence of God's visible intervention has been, and should continue to be, a humane decision. And we physicians must not fail to accept that responsibility.

Not like cruel exterminators but like defensive protectors of reality, we should use our skills to recognize the living from the obviously dying.

H. Robert Silverstein, M.D.

Dr. Silverstein is a cardiologist in private practice in Hartford, CT. He is clinical assistant professor of medicine, University of Connecticut School of Medicine, Farmington, CT.

Reprinted with permission from *Medical World News*, June 8, 1987.

Ethical Physician's Role Is to Help Dying Patients Die

We physicians have become confused about what constitutes form versus substance in the care of the very ill. Physicians have always been responsible for the care of the patients, and it is quite arbitrary that that care seems to have been defined, up to now, only as preserving life. In reality, the care of the patient may be and has been at times fostering death—quite naturally!

We hang on to old ideas; we now act as if we are endowed with divine gifts of insight that the preservation of life is the only path. Times change, we change, and the rules are not immutable.

Ethical physicians have always helped those die who are dying, and they will continue to do so! The hoopla that has been raised by the "Debbie letter" or the great many debates back and forth by "ethicists" or, for that matter, the trauma of the courts does not settle or evade the issue.

The care of a human being is the care of a human being. At times life is correct, and at times death is correct.

As with all human decisions, we physicians must pray for divine guidance, but as with all human decisions, ultimately we should, and will use our most kind, and loving judgments, and be physicians.

Let any of us be careful not to speak for that divine wisdom. Let all of us be careful to approach that judgment with humility. But approach that judgment and perform as we should. There is no absolute rule, there has been no such rule, and there will be no final rule. The rules change, the road turns, and we must stay on the road or go off into confusion or dogma.

Although it is important to resist "trendy" ideas, it is important also to recognize the advances in thought and action that come along. We are developing an increasingly disabled population not merely on the basis of age. We are developing technologies that have kept a great many alive to points that constitute cruel and unusual suffering. However, we see ourselves as the benefactors of life when we should see ourselves as mere physicians who have the responsibility, at times, to decide *for or against* death as there is "for or against" everything. No judgment is absolute, no judgment is final, in determining correct posture. We need to temper our quality of judgment with more mercy. Seldom are those who practice or recommend euthanasia anything other than kind, thoughtful, and strong characters who too frequently are made to crumble beneath the onslaught of accusations, their sensitivities being totally exposed.

Euthanasia is not always correct; I am not suggesting gang war. However, euthanasia tends to be much more right than we as a culture currently view it.

H. Robert Silverstein, M.D.

Reprinted with permission from *Medical Tribune*, June 9, 1988.

AROUND THE STATE

CSMS VICTORIOUS IN FOUR-YEAR FOOT BATTLE

Podiatrists Lose Ankles

In a unanimous ruling on 22 August the Connecticut Supreme Court upheld the decision of the Superior Court that the foot is the part of the body "*below* the ankle joint." The Connecticut State Medical Society had challenged a 1984 ruling by the state's Board of Examiners in Podiatry that "the ankle is part of the foot and the foot is part of the ankle," and therefore podiatrists could treat ankle ailments.

This ruling was reversed in the Superior Court, whose decision was upheld in the Supreme Court. According to Supreme Court Justice T. Clark Hull, who wrote the unanimous opinion, the Superior Court had correctly "relied on common usage and the dictionary definition of 'foot' in construing (the law). Had the legislature intended to include the ankle in the definition of 'foot,' it could easily have done so."

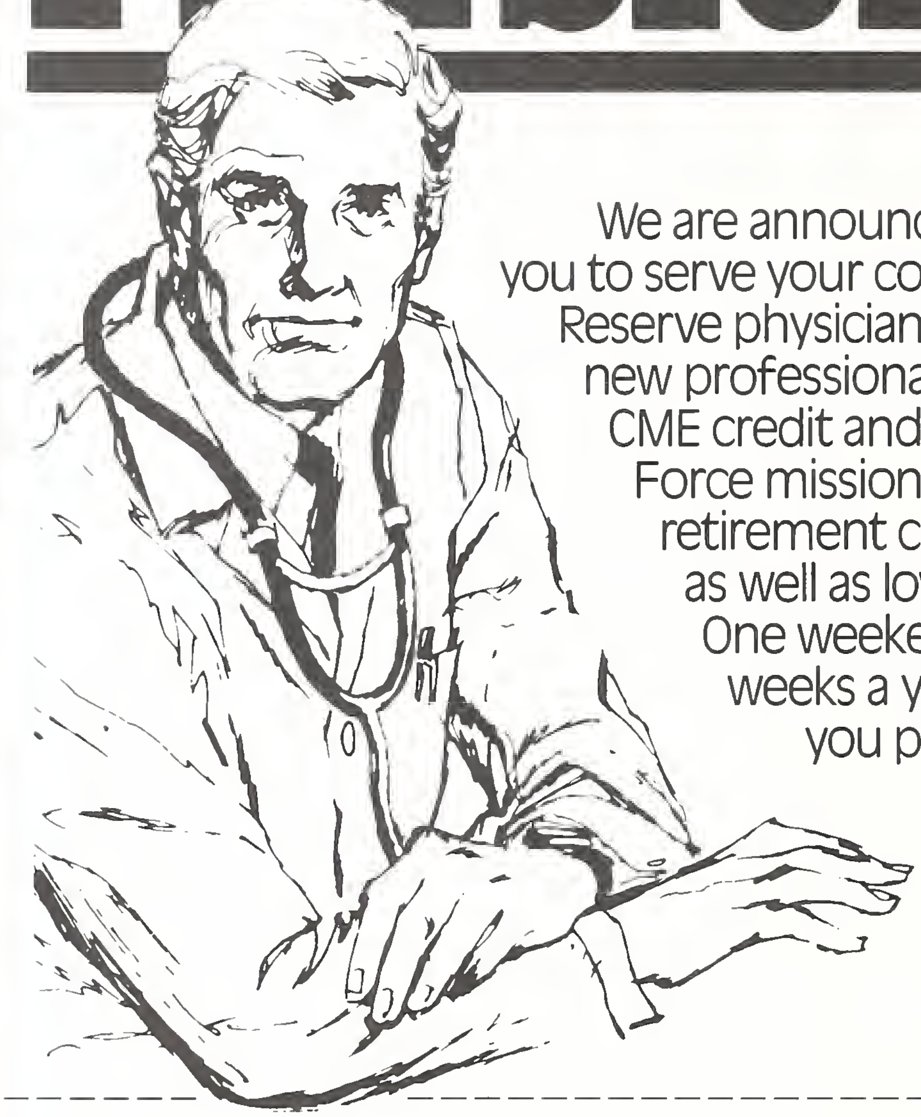
Hartford attorney William H. Narwold represented the podiatrists in the case, which will not be appealed further. According to a *Hartford Courant* news article, Narwold blamed the Connecticut State Medical Society for his clients' loss, saying that the doctors fought the long battle for one reason — money. But CSMS attorney, Jeanette C. Schreiber, said that the issue was the safety of patients, not money. "The number of ankle patients is small," she said. "If the medical society did not stop the podiatrists, those in other branches of health care might also start giving treatments they are not authorized to provide."

In a humorous article appearing later the same week, *Hartford Courant* columnist, Colin McEnroe, agreed that doctors "have a point" about what he called "rampant imperialism among medical subcontractors." According to McEnroe, "How would it be if your dentist said, 'As long as I'm in here, you want these tonsils out?' How would it be if your optometrist said, 'You know, these frames would look even better if we did just a touch of rhinoplasty. You got time to go under?' "

After the Society's long and costly battle, the issue of what constitutes the foot appears to be settled as a matter of anatomical determination, but another battle may be just beginning. It is conceivable that the podiatrists could again attempt to expand their scope of practice by pressing their claim in the General Assembly, and by trying to convince the legislators to overrule the judges, the dictionaries, the scientists, and nature itself, simply by *legally* redefining the foot to include the ankle.

That kind of "political anatomy" is not part of any medical school curriculum, but it is now familiar territory to CSMS, whose legislative forces are being readied for the next round, if it comes.

Robert J. Brunell



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The President's Page

Making It Easy to Join M.D. Health Plan

A unique opportunity is soon to be presented to the CSMS membership. Subject to regulatory permission, another offering will be made by M.D. Health Plan. This physician-friendly HMO has been operational for ten months, and now has over 6,000 enrollees. To gain better physician representation, (now at more than 1,600 throughout the state), M.D. Health Plan will attempt to address concerns expressed by physicians not yet participating. Your joining will assure the needed capital until breakeven, now projected as July 1, 1989. The new arrangement will stress greater cooperation with your own local IPA, now recognized by M.D. Health Plan as beneficial and compatible with a unified statewide medical care network.

Recognizing the excellence of our utilization review and quality assurance programs, Stirling and Stirling, Inc., the second largest administrator of self-insured health programs in the state, has developed a joint venture with M.D. Enterprises of Connecticut and CSMS-IPA. This venture widens the base of MDEC and improves profitability. It also makes CSMS-IPA physicians available to provide quality care within the system to up to 40,000 S & S program patients.

M.D. Health Plan is also the only HMO in the state to adopt an outpatient quality monitoring plan. The Harrington "Patterns of Care" system is standardized by input of national specialty boards and other experts. The data has been computerized and integrated into the usual processing of claims. Claims appearing contrary to established standards are flagged for evaluation on a concurrent basis; and this makes quality of care and utilization more timely and meaningful. I believe this program gives M.D. Health Plan an edge in providing the best care in today's climate of economic restriction.

I believe M.D. Health Plan is viable, growing, and worthy of being supported as the first and only *statewide* physician-owned plan. M.D. Health Plan provides UCR-based remuneration and allows traditional access to all participating physicians. Its unique utilization and quality review programs apply to inpatients and outpatients alike. Joining M.D. Health Plan means retaining control of the business and professional decisions which keep us independent practitioners and strong advocates for our patients.

This is also the basis on which the CSMS Council has recently acted unanimously to financially guarantee the Plan's stability during the new stock offering this fall. These credit guarantees voted have involved no transfer of CSMS funds, but have enabled MDHP to utilize its own capital while maintaining statutory reserve requirements. The fact is that to date, M.D. Health Plan has cost CSMS nothing, with $159,00 in startup seed money and all earlier guarantees having been totally repaid last year.

In like manner, seven years ago, the Council financially assisted the development of CMIC, so that it could be rapidly implemented in 1984. Even now, CMIC serves less than half the CSMS membership directly, but it has benefitted all our physicians, assuring them accessible professional liability insurance at competitively controlled premiums ever since. In 1989 and beyond, we will all be better off if M.D. Health Plan likewise succeeds and competes successfully with the large third-party payers; otherwise, nothing will prevent them from ratcheting down accessibility and fees progressively into the future.

I hope you will look carefully at the new M.D. Health Plan interim arrangements, and recognize that you can support yourself and your own Medical Society in our attempts to prevent the control and monopolizing of your patients by big business interests. With the acquisition of HealthCare, Inc., Blue Cross/Blue Shield now controls over 60% of the HMO business in the state of Connecticut.

Join us in this exciting venture which combines the best of care for our patients with keeping control of our own professional destiny.

Norman A. Zlotsky, M.D.
President

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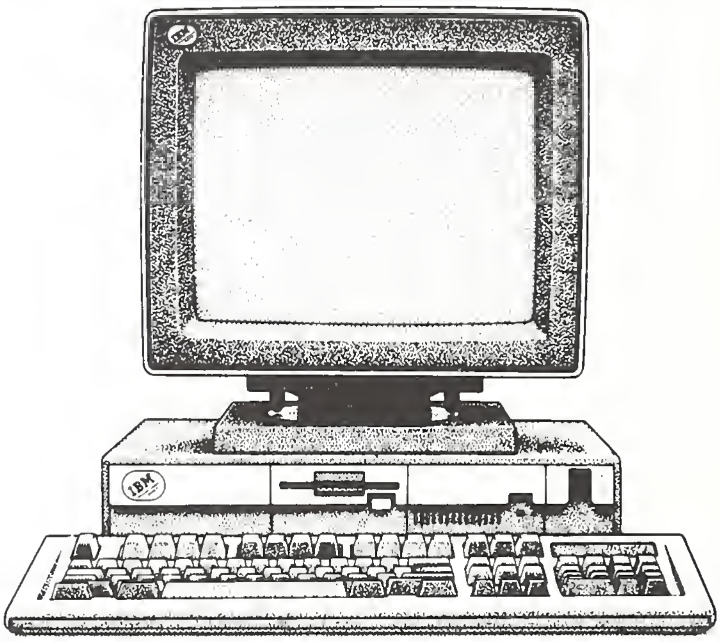

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Reflections on Medicine

Defining Goals to Set Limits

ROBERT U. MASSEY, M.D.

Some of us now and then have trouble selecting the right word from a pair of expressions having related, but neither identical nor opposite, meanings. Even when we know the definitions quite well, we pause and frequently are embarrassed by blurting out, or, even worse, writing the wrong one for everyone to see. Each of us has a list; mine includes: sensitivity-specificity, incidence-prevalence, birth rate-birth numbers, median-mean, objective-goal. Except for this last pair, the definitions are straightforward, one is right, the other dead wrong.

Managers like to make a distinction between goals and objectives, although Webster's shows both *goal* and *object* as synonyms for *objective*. Management terminology, especially since the 1940s, has made generous use of military terms, and *objectives* seems to go with tactical planning, and *goals* with strategic. Deans, who know next to nothing about management when they begin their jobs, learn at least the words if not the theory and practice in short order. Someone will refer to "management by objectives," explain that objectives must be definable, measurable, or at least somehow recognizable when they are achieved; goals, on the other hand, are elusive, difficult to define, like "excellence," "high quality patient care," "preeminence in research," "health," and "happiness."

Medical schools are required periodically to undertake a detailed self-study in connection with their accreditation by the Liaison Commission for Medical Education; at those times there is much talk in faculty committees of goals and objectives, the more compulsive members demanding precise definitions and willing to work at them to the exclusion of their real work; others impatient to get on, declare that if we don't know what we're supposed to be doing, we oughtn't to be here. But something does finally have to be written down, as it must in any organization, and then all these objectives must be ranked in some order, one above or below the other. It is easier with goals, because, being broad and airy, they may be given equal weight, or weightlessness: excellence in education, patient care, and reasearch; providing an environment for lifetime learning; meeting the health needs of the nation; etc., etc.

Our ancestors had less trouble with all this; in a society that was less pluralistic and only on the way to becoming secularized, goals were assumed to be about the same for everyone, and organized in the same hierarchical manner. Objectives were means, goals were ends. Fifty years ago I was reminded that the goals of a college education were to learn to recognize "the good, the true, and the beautiful," Now with individual autonomy elevated to the highest place, any attempts to be specific about goals may represent an attack on individual rights and a denial of the dogma of value neutrality. "It's safer," as one professor put it, "to shovel fog, talking gravely of academic freedom and the pursuit of excellence."

Objectives are easier to define, and safer, both for institutions and for individuals; they may generally be translated as *more;* more space, profit, power, health, years of life. Unfortunately, setting limits to anything, being able or compelled to say "enough," is taken out of our hands and turned over to some kind of marketplace where we are never in charge. In an ideal world, we would define and order our goals, all related to some highest goal, and write objectives precisely suited to reach them.

There is an uneasy feeling around the place that we may soon have to do just that, however idealistic and impractical it all sounds; in fact, that we may have to do it in regard to just about everything. Setting limits to growth was cocktail-party talk after the energy crisis 15 years ago, but then we got bored with it. This summer with its medical rubbish on the beaches, its hot, dry warning of the coming greenhouse effect, its dying forests, its hole in the ozone, Daniel Callahan's book, and the reminder that the population bomb keeps ticking even though we pretend not to hear it may turn us from picking away at objectives to harder talk about goals.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

LAW, MEDICINE AND PUBLIC POLICY

Active Euthanasia: Further Lessons from the President's Commission

JOSEPH M. HEALEY, J.D.

Proponents of a change in the legal prohibition against active euthanasia by physicians frequently assert that the existing prohibition produces undesirable consequences such as the prolongation of suffering and the denial of the patient's right of self-determination. These concerns have been advanced to justify legal reforms such as the proposed California initiative which would permit physicians to engage in the active taking of life. The President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research addressed these issues in its consideration of the ethical and legal implications of the existing boundaries of public policy and concluded that, based on current evidence, changes in these boundaries were neither necessary, nor desirable. The Commission's consideration of these issues suggests the context in which future discussions will occur.

In its report, *Deciding to Forego Life-Sustaining Treatment,*[1] the Commission concluded that evaluating the policy role of the distinction between an act that leads to death and an omission that leads to death in regulating behavior requires "balancing its positive value as a safeguard that protects human life against its negative consequences of contributing to some undesirable decisions."[1(pp72,73)] The Commission went on to state:

> Although there are some cases in which the acting-omitting distinction is difficult to make and although its moral importance originates in other considerations, the commonly accepted prohibition of active killing helps to produce the correct decision in the great majority of cases. Furthermore, weakening the legal prohibition to allow a deliberate taking of life in extreme circumstances would risk allowing wholly unjustified taking of life in less extreme circumstances. Such a risk would be warranted only if there were substantial evidence of serious harms to be relieved by a weakened legal protection of life, which the Commission does not find to be the case. Thus, the Commission concludes that the current interpretation of the legal prohibition of active killing should be sustained.[1(p72)].

The Commission went on to dismiss claims that the legal prohibition of direct killing of patients such as terminally ill patients should be viewed as prolonging the suffering of such patients, emphasizing that health professionals are authorized and even obligated to use available pain-relieving drugs and procedures with the consent of the patient or a surrogate, even if an earlier death is likely to result.[1(p73)] Finally, the Commission concluded that the limitation on individual self-determination resulting from the prohibition of direct killing was an acceptable cost of securing the general protection of human life.[1(p73)]

On May 9, 1988, it was announced that supporters of the California Humane and Dignified Death Act had failed to obtain the necessary 372,178 signatures needed to place the controversial proposal on the November ballot.[2] Among the explanations for this defeat provided by its proponents was the failure of the sponsoring organization ("Americans Against Humane Suffering") to marshal its resources in an effective manner to reach the segment of the California population which supported the proposal.[2] Opponents argued that the failure affirmed the general reluctance of the people of California to allow physicians to take the lives of their patients.[2] In any event, the result is that the proposal will not be considered by Californians in this year's general election. The issues raised by the proposal are not likely to fade away. Its supporters will try to have it introduced in the next legislative session and will try another initiative if they are unsuccessful. Unless the perception that the proposal is unnecessary or undesirable, reinforced by the Commission's conclusions, can be overcome, it is unlikely for these actions to be any more successful than was this recent effort.

REFERENCES

1. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research: *Deciding to Forego Life-Sustaining Treatment: A Report on the Ethical, Medical, and Legal Issues in Treatment Decisions.* Government Printing Office, 1983.
2. Gianelli DM: "Calif. suicide initiative fails signature drive." *American Medical News,* May 20, 1988, p. 1.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

DIAGNOSIS AND TREATMENT A PRESCRIPTION TO FAILURE

To the Editor: In the June, 1988 issue of *Connecticut Medicine* there was an editorial entitled "Diagnosis and Treatment , A Prescription for Failure," written by our new President, Norman Zlotsky, M.D. Knowing that Dr. Zlotsky is a particularly diligent and caring physician, I quickly went to read that page. It was somewhat disappointing to find that it was concerned with what can euphemistically be called a territorial dispute between orthopedics and physical therapy. Even to generalize this as a territorial dispute between physicians and allied professionals, falls short of the potential in the title.

There are many crises in medicine today with increased regulation, increased costs which are often improperly blamed on physicians, and increasing segments of the health industry that are solely interested in "the bottom line."

Whereas physicians need to stay alert and active to modify these trends that affect the care of our patients, the one major crisis which is influencing our effectiveness, is an increasing tendency to "diagnose and treat;" to treat disease as if it existed in a vacuum. As the science of medicine has improved, it has been more possible to successfully treat disease in that manner, but our effectiveness as physicians depends on our remembering that there is a whole patient wrapped around that illness and a whole constellation of people wrapped around that patient. It is to the degree that we fail to communicate and care for the whole patient that we lose a part of our ability to relieve pain and suffering. Let us then heed the title "Diagnosis and Treatment, A Prescription to Failure" and let us diligently continue to empathize and communicate with our patients, so that each person realizes that he has a friend who is trying to help him.

Carlos G. Benavides, M.D.
Manchester, CT

Dr. Zlotsky responded directly to Dr. Benavides upon receiving a copy of this letter; he has given us permission to print that response.

Dear Carlos: I am sorry that my title mislead you but it was appropriate for the content and important from what you mentioned in your second paragraph "the bottom line." It affects every physician who prescribes physical therapy as well as pointing out a situation which could decrease the quality of care in Connecticut and add another unnecessary layer of health care. I believe that is a valid interest for organized medicine.

Your point is well taken but is another problem that has more to do with the teaching of medicine today than how we can effect our peers. Physicians are individualists who rarely will concede in an argument. I believe your letter is a case in point. My problem as President of the Connecticut State Medical Society is to try to get physicians to agree that our system of care of the whole patient with the physician as patient advocate is best and be willing to stand up for this goal with time and money. If I can recruit you, please let me know and I will tell you what I think can be done. To start with, there is a legislative forum which will be open to all physicians on September 15th in the morning at the Ramada Inn in North Haven with a luncheon and a political speaker. You have my personal invitation long before the brochures are sent. If you want to make your point, you have to get involved. As President of the Connecticut State Medical Society, you could put anything you want under that title. I hope you will consider it.

Norman A. Zlotsky, M.D.
Rockville, CT

ADMINISTRATIVE APPROACH TO THE MALPRACTICE PROBLEM

*To the Editor:*The AMA/Specialty Society Medical Liability Project's fault-based administrative alternative to the tort system, summarized in the July issue, deserves close scrutiny by all physicians in the state of Connecticut. If this plan were adopted by our state, it would drastically change the malpractice climate, removing the enormous emotional and economic strain of the tort system in resolving questions of negligence, and would go a long way toward restoring the patient/physician relationship to one of mutual trust and partnership in providing health care services.

I was once told that if I practiced good medicine, I never needed to fear a malpractice suit. That day has long passed. Any jury can interpret what "good medicine" is, and the threat that this will be turned against us with any real or perceived maloccurrence hangs over us constantly.

On the other hand, a patient who truly believes that a physician or other health care provider caused an injury because of negligent care has no way to find out the truth without going through a lawyer to obtain records and review the acts of omission or commission which have been associated with the injury. Unfortunately, once an attorney is involved, the only way the patient can get the information for free is to work on a contingency fee basis, encouraging a lawsuit if there is any chance of a significant financial recovery.

There are other patients who are in fact injured by negligence, but who recover completely and have minimal economic loss. These patients are angry and bitter at the medical profession, but receive no help from the legal profession unless they can figure out some way to inflate the level of damages to be paid. Without a way to pay for court costs, and make a reasonable profit, lawyers won't take these cases.

The beauty of the proposed administrative system is that "good medicine" should be the standard once again. If an administrative commission finds fault on the part of a physician, it must do so on the basis of some standard which will be consistent for every other physician in the state. No longer will we be tossed around by the impossible dilemma that occurs when any given choice of medical therapy has its risks, and "you are damned if you do, and you are damned if you don't" do what some jury decides should be done. Rather, one should be exonerated when any choice of therapy results in a maloccurrence, as long as reasonable medical standards are followed.

The patient who files a complaint under this system, can get a prompt answer to the question of whether or not a physician's negligence caused injury. And if that injury causes economic or noneconomic loss, a consistent pattern of reimbursement can be established. The bitterness that many patients feel against our current system should be alleviated, because any injury, no matter how small, can be investigated at no cost to the patient, and the question of negligence can be resolved.

However, the public must be satisfied that such a system is not a license to practice in a cavalier fashion. Built into this system, the public must have some confidence that those physicians who do cause injury due to negligence will be investigated and, if necessary, disciplined in an appropriate way. The proposal includes mechanisms to satisfy this concern. Some physicians may be concerned about the "power of the state" in determining standards of medical care. However, most of us would welcome standards created by a professional commission dedicated to the provision of good medical care. It will be important that our specialty societies, and the medical profession as a whole, work with the commission to create consistent standards of care which are not going to be twisted and bent like the whims of the jury system.

It is difficult to conceive of any commission that would be worse than allowing the current system to prevail. Even if a commission were to create standards which physicians found too restrictive or even in error, we would at least know what standards we were expected to live by, and would have a target, a single group of commissioners, with whom we could negotiate to improve the standards from the point of view of organized medicine.

Of course, we would then have the responsibility within organized medicine to establish more consistent standards of care than we are currently willing to provide. Perhaps one of the most important values of an administrative fault-based system is that it would force us to come to grips with our own reluctance to establish what "good medicine" really is.

It is about time that such decisions are made on the basis of scientific evidence, rather than emotional bias, either on the part of physicians or juries. I believe that a fault-based administrative approach to the medical malpractice problem will not only be good for physicians and patients who are injured. I believe it also will be good for the practice of medicine itself, in creating an atmosphere in which "good medicine" rather than "low risk" medicine can be pursued without fear and doubt.

David B. Bingham, M.D.
Norwich, CT

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RALPH L. GILMAN, M.D.
1902 - 1988

Ralph L. Gilman, M.D., of Storrs, died in Evans, Georgia, on 5 May at the home of his daughter, Priscilla Ann Gilman, M.D., where he had been living since the death of his wife, Ruby, in September 1987.

Dr. Gilman had been president of the Connecticut State Medical Society during 1964-1965, and was president of the Windham County Medical Association in 1966-1967. He worked tirelessly for organized medicine, including the American Medical Association, and was a life member of the American College of Physicians.

Dr. Gilman was born in Roslindale, Massachusetts, attended Roxbury Latin School where he was active in sports as quarterback, centerfielder, and runner. He graduated from Harvard College in 1925, Harvard Medical School in 1929, and completed his 18-month internship at Hartford Hospital in 1930. He began practice in Storrs in January 1931, where he was both town doctor and physician to the Connecticut Agricultural College, taking special delight in watching over the varsity teams. In 1949 he opened a new office on Dog Lane to practice full time, but very shortly was urged to serve as Mansfield's medical examiner, a position he held for the next 20 years. Days and nights were busy with office, hospital, and house calls, as well as night-time summons by his friends in the local and state police departments. He had been a staff member at Windham Community Hospital since its founding in 1933, and later held the position of chief of the medical services. After over 50 years of service to his patients, his community, and his profession, he retired in 1981.

Shortly before completing his internship in 1930, he married Ruby Weaver of Torrington, a graduate of the Hartford Hospital School of Nursing, and by this time a head nurse at the hospital. They ran a medical office together during World War II and the early postwar years, raised four children, and when there was time travelled to colorful places around the world armed with her paintbrush and his camera. After 56 years of marriage his wife preceded him in death only six months before he died.

Dr. Gilman is survived by his brother, Richard I. Gilman of Torrington, and his four children, Donald L. Gilman of Alexandra, Virginia, James I. Gilman, M.D. of Denver, Colorado, Priscilla Ann Gilman, M.D. of Evans, Georgia, and Peter A. Gilman of Boulder, Colorado.

R.U.M.

From the Executive Director's Office

CALL
SEMI-ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1988 Semi-Annual Meeting of the House of Delegates will be held at the Ramada Inn, 201 Washington Avenue, North Haven. The meeting will commence at 10:00 A.M. on Thursday, November 17, and will continue until all business has been concluded.

9:30 Registration and Continental Breakfast
10:00 Call to Order

Norman A. Zlotsky, M.D., President
Kenneth M. Robbins, M.D., Speaker of the House
Katherine C. Ill, M.D., Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society provides that:

Resolutions may be introduced by any Active, Life Member, Student Member or Postgraduate Physician Member of The Society, in compliance with the following provisions.

a. *All resolutions, reports and similar items of business submitted in writing and received at the office of the Executive Director not later than thirty days before the date scheduled for that meeting shall be considered as regular business of the House of Delegates.*

b. *Component county associations or the Student Member or Postgraduate Physician Member Associations whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports, and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.*

c. *Reports, recommendations, resolutions, or other new business may be presented to the House of Delegates by the Council of The Society at any time and shall be considered as regular business.*

d. *Any business which does not qualify as regular business in accordance with the foregoing provisions may be accepted for consideration by a majority vote of the delegates present and shall be referred at once by the Speaker to a reference committee. When business is introduced under the provisions of this paragraph the vote shall be taken without debate, except that the introducer shall be allowed not more than two minutes to explain why it should be considered as regular business.*

PROPOSED AMENDMENT TO THE BYLAWS

The following proposed amendments to the Bylaws were presented to the House of Delegates on May 4, 1988 and tabled for consideration and action at the next regular meeting of the House of Delegates.

In accordance with the Bylaws, these amendments are being published in *Connecticut Medicine* "on one or more occasions prior to the next meeting—at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates."

SUBJECT: QUORUM

PURPOSE: To reduce the size of the quorum

RECOMMENDATION: Replace Section 11, Article V - HOUSE OF DELEGATES, with the following amendment:

Article V - House of Delegates
Section 11 - QUORUM (Change in Capitals)

A quorum, TO CALL TO ORDER, any meeting of the House of Delegates shall consist of a majority of the sum of the number of delegates eligible to vote in the House. ONCE THE MEETING HAS BEEN CALLED TO ORDER, A QUORUM SHALL CONSIST OF FIFTY PERCENT OF THE TOTAL DELEGATES REGISTERED.

SUBJECT: HOSPITAL MEDICAL STAFF SECTION

PURPOSE: Establishing a CSMS Hospital Medical Staff Section (Additonal words in capital letters and bold)

Article V - House of Delegates
Section 2 - Composition

The House of Delegates shall be composed of: (a) delegates elected by the component association according to the apportionment provided in Section 4 of Article V of these Bylaws; (b) those members of the Council who are eligible to vote in the Council; (c) all past presidents of The Society and such other members of the Society in good standing as may be approved by the House of Delegates, from time to time, who shall be ex officio members of the House of Delegates without the privilege of voting; (d) delegates elected by the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** according to the apportionment provided in Article V, Section 4 of these Bylaws.

Section 4 - Apportionment, Par. 2

The number of delegates from the Student Members shall be one delegate and one alternate from each medical school in the state. The Postgraduate Physician Members shall be entitled to send from their constituent membership to the House of Delegates each year one delegate for every seventy, or fraction thereof, of the number of members as recorded in the office of the Executive Director of the Society on December 31 of the immediately preceding year. **THE CSMS HOSPITAL MEDICAL STAFF SECTION SHALL BE ENTITLED TO SEND ONE DELEGATE AND ONE ALTERNATE.**

Section 5, Registration, Par. 1

Before every session of the House of Delegates, the Student Members and Postgraduate Physician Members and **THE HOSPITAL MEDICAL STAFF SECTION** shall deposit with the Secretary of the Society a certificate or list signed by the president, secretary, or duly authorized representative of the Student Members and the Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION,** respectively, or the Executive Director of the Society, listing those members entitled to be seated in the House of Delegates.

Section 5, Registration, Par. 3

When an elected delegate or the elected alternate from the Student Members or Postgraduate Physician Members **OR THE HOSPITAL MEDICAL STAFF SECTION** is unable to attend a specified session, the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** may appoint a substitute delegate and alternate delegate.

Section 12, Procedure, Par. 3(b)

Component county associations or the Student Member or Postgraduate Physician Member associations **OR THE HOSPITAL MEDICAL STAFF SECTION** whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.

Article XV - Associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS**

Section 1. Definition

The Council shall sanction associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS.** These Associations shall meet between forty-five and sixty days prior to the annual meeting of the House of Delegates of the Society for the purpose of election of officers and delegates to the Society and at such other times as they deem necessary.

Section 2. Bylaws —

The Student Member and Postgraduate Physician Member **AND HOSPITAL MEDICAL STAFF** associations shall have the power to adopt bylaws that are not in conflict with the bylaws of the Society. In the event of an existing or apparent conflict, the Bylaws of the society shall take precedence.

COUNCIL MEETING

Wednesday, July 20, 1988

Attendance

Present in addition to the Chairman Dr. Guy W. Van Syckle were Drs. Ahamed, Beck, Blum, Bobruff, Eslami, Fox, Freedman, Hollister, Jr., Ill, Kamens, McDonnell, Orphanos, Petrie, Reyelt, Jr., Robbins, Rose, Sadowski, Schwartz, Sousa, Upham, Villa, Wetstone, Whalen, Jr., Zanker and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Sullivan, Mr. Staples, Mr. Tomat (FCMA), Ms. DeLauro (HCMA), Ms. Harney (NHCMA) and Mrs. Reed (President, Auxiliary).

Absent were: Drs. Abbot, Bonner, Chmieleski, Czarsty, Dardick, Kaufmann, O'Brien, Rubin, Welch and Zeppieri.

Certification Regarding Authorization of Loan Guaranty

Dr. Zlotsky reported that at the meeting of June 2, a loan for $600,000 to M.D. Health Plan was approved. Because of some confusion in the presentation in calling it a "bridge loan" and including a time frame, legal counsel has advised that this action should be clarified. So that there would be no misunderstanding about the action taken, it was VOTED to approve the loan of $600,000 with the knowledge that it is without any time restriction. To implement this action the Council VOTED to authorize the CSMS Secretary to execute the following document which will be delivered to M.D. Health Plan:

> "RESOLVED: That the actions of the treasurer of the Society in executing and delivering on behalf of the Society the Agreement of Guaranty and Suretyship dated as of June 30, 1988 between the Society and Connecticut Savings Bank (the "Guaranty") in the executed form presented to this meeting, which Guaranty provides a $600,000 guarantee of obliga-

tions from time to time owed to Connecticut Savings Bank by M.D. Enterprises of Connecticut, Inc. ('MDEC") are actions taken and documents executed and delivered by the treasurer in connection with the foregoing are hereby confirmed, ratified and approved; that the transactions thereby contemplated, including without limitation the guarantee of up to $600,000 in principal amount of MDEC obligations, are hereby confirmed, ratified and approved."

Reports of Physicians Serving on State and Federal Agencies

Dr. Kamens brought to the attention of the Council that there are several seats on the CPRO Board designated for physician representatives of CSMS. Annual election of Directors to the CPRO Board will take place in October. There is one CSMS designated directorship which has not been filled to date. It was VOTED to nominate to the CPRO Board six physicians, from which three physicians will be selected to fill the terms which expire in October. The six physicians will be selected at the next Council meeting.

Report of the President.

Dr. Zlotsky reported on the following items:

Medicare Assignment—The Department of Aging took over the program on July 1, 1988 and their emergency regulations outlined that the CSMS Courtesy Card, the ConnPACE card and their own card should be accepted as valid until January 1, 1989. The Department is supposed to supply applications for physicians' offices, but cannot do so until they have received funding for the program.

Nurses' Activities—A letter was received from Stephen Harriman requesting CSMS to name a physician to serve on the Ad Hoc Committee on Nurses' Prescriptive Authority. Dr. Roger Beck has been designated to serve on this committee and will keep the Council posted on the committee's activities.

A letter was also received from the Connecticut Nurses' Association notifying the Society of its intent to take every measure necessary to prevent the implementation of the RCT (Registered Care Technologist) or any other new health care worker in Connecticut. The AMA Board of Trustees is proposing a pilot program to create a Registered Care Technologist in response to the severe shortage of nurses. This subject received a great deal of attention at the Recent AMA meeting and during discussion it was stated that the AMA has scheduled meetings with the American Nurses' Association with the hope that something will come of these meetings before having to implement the RCT program.

Legislative Forum—A Legislative Forum will be held on September 15, 1988 at the Ramada Inn, North Haven from 8:00 A.M. to 1:30 P.M. which will be followed by a Council meeting.

Tort Reform—It is now evident that the most effective factor in controlling the cost of malpractice insurance is placing a cap on non-economic damages. However, there is a question as to whether this is legal in Connecticut and before pursuing this issue further the matter must be researched as to its constitutionality.

President's Advisory Committee—The President recommended and it was VOTED that a President's Advisory Committee be established as a Subcommittee of the Council to be composed of the President, President-Elect, Vice-President, Chairman of the Council, and Past President.

X-Ray Regulations—A hearing was held on the new X-ray regulations that the Public Health Committee is developing and several changes will be made. Many of the changes are duplicates of regulations already in place by the Department of Environmental Protection and in his testimony, Dr. Zlotsky strongly recommended that the Public Health Committee keep in contact with the DEP and make the regulations as uniform as possible. X-ray equipment in physicians' offices will be monitored and it will probably cost between $75.00 to $125.00 a year to have this done. He recommended that a specific form be developed that could be filled out which will help both the physician and the state in evaluating the X-ray equipment. There will also be some CME requirements each year both for technicians and physicians who are licensed after 1979. The level of training of technicians was also being reviewed and some restrictions as to the type of X-ray examinations that could be performed were being developed. This was a preliminary hearing and it is possible that there will be revisions in some of the ideas set forth before the regulations are issued.

Pension Fund—The background concerning the development of a pension fund for CMMI was outlined and a report of the meeting of the Pension Administrative Agency was presented which reviewed the present CSMS pension program. Following discussion in executive session, it was VOTED to refer the subject back to the Pension Administrative Agency for resolution. It was further VOTED that the Pension Committee should report to the Council prior to each annual Meeting.

Report of the Executive Director

Tim Norbeck reported on three separate issues:

1. The New York legislature suspended its working schedule as of mid-July but plans to resume its deliberations sometime in August. It appears that there will not be any mandatory assignment legislation enacted this year because of a disagreement between the House of Representatives and the Senate. The House favors an across the board assignment law whereas the Senate favors a means test.
2. The CSMS has been notified by the office of Senator Christopher Dodd of a seminar entitled "The Gaps in Health Care Coverage" which will be held at the Harkness Auditorium at Yale on Tuesday, September 6, 1988 from 9:00 A.M. until noon. Physician members of the Council will be invited to attend the meeting.
3. Mr. Norbeck also reported on a luncheon held with Frank Carrano, President of the New Haven Teacher's Union. Jerome K. Freedman, M.D., set up the meeting which he attended along with Bob Brunell. The purpose of the discussion was to determine areas of agreement on

the issue of mandatory assignment which will be an important item on the 1989 legislative agenda.

Report on the AMA Meeting

A summary report on the 1988 Annual Meeting of the AMA House of Delegates had been mailed to the Council with the agenda for the meeting. Several members of the Connecticut delegation commented on the meeting and some of the main issues discussed were Registered Care Technologists (RCTs), AIDS, Medicaid Reform, and Medicare Claim Denial

Dr. Freedman reported on the campaign efforts to elect Dr. Edward Kamens to a post on the Council on Medical Service. Dr. Kamens ran against an incumbent from New England, who was running for re-election, and ran a campaign that did not offend his opponent and was very well received by all. It was urged that Dr. Kamen's profile be kept high and not let the House of Delegates forget about him.

Connecticut Neurological Society

A letter from the Connecticut Neurological Society was reviewed in which it was requested that CSMS file a "Friend of the Court" brief (if necessary) concerning Connecticut Law requiring physicians to report patients with epilepsy or syncope. From the latest communication received from the Connecticut Neurological Society, it appeared that in recent meetings with the Commissioner of the Motor Vehicle Department that the discussions were promising in terms of a constructive resolution of the driving law considering the needs of the public at large, and patients. It was VOTED that CSMS file as a "Friend of the Court" if necessary.

CSMS - IPA

Dr. Robbins presented two resolutions which had been approved by the membership of the IPA and now had to be ratified by CSMS as the sole shareholder. The two resolutions were acted on separately as follows:

(a) VOTED to approve the resolution that the amendments to the Bylaws of CSMS-IPA as proposed in the Proxy Statement and as set forth in Exhibit A attached thereto for the June 22, 1988 meeting of Active Members of CSMS-IPA (which amendments have been approved by the vote of two-thirds of such Active Members voting in the June 22, 1988 meeting) are hereby adopted in their entirety.

(b) VOTED to approve the resolution that the individuals ratified as nominees for directors of CSMS-IPA are hereby elected as directors of CSMS-IPA, each to serve for the periods set forth in the Proxy Statement relating to June 22, 1988 meeting.

It was VOTED that the CSMS Secretary be authorized to sign all the necessary documents to carry out these actions.

Because the IPA Bylaws required that all IPA Board Members be active members of the organization, it was VOTED that Dr. Gerald L. Schwarz of Rockville, replace the CSMS President-Elect, Roger Beck, M.D., as an ex-officio member of the Board, and to request the IPA to invite the President-Elect, Dr. Beck, to all their meetings.

Report on Countersuit

Dr. William Schear, Chairman of the Ad Hoc Committee on Countersuits and Attorney Carter LaPrade joined the Council to discuss the countersuit of James F. Flint, M.D., a Waterbury physician against Attorney William R. Moller, a Hartford attorney, who had represented a plaintiff in an earlier malpractice action that had been resolved in the physician's favor. Dr. Schear gave a chronological review of the case which started in 1980 and ended in 1988 with Dr. Flint receiving a $99,000 out of court settlement. The CSMS Council had approved supporting Dr. Flint through the payment of legal fees connected with his countersuit. Mr. LaPrade presented Dr. McDonnell, CSMS Treasurer, with a check in the amount of $56,062.08 and, in executive session, gave the Council an accounting of the case.

At the close of the executive session, it was VOTED to approve the report with commendation to Dr. Schear, the Committee and Attorney Carter LaPrade. It was further VOTED to recommend to the Editor of *Connecticut Medicine*, that an official report and outcome of the case be published in *Connecticut Medicine* and reprints be made available for other sources including CSMS Newsletter, plaintiff's bar, etc. Any release of this information should be done in consultation with the CSMS attorney.

Dates of Semi-Annual and Annual Meetings

It was VOTED that the Semi-Annual Meeting of the House of Delegates would be held on Thursday, November 17, 1988 at the Ramada Inn, North Haven.

It was also VOTED that the 1989 Annual Meeting would be held on May 10, 11, at the Ramada Inn, Meriden and that the two day format would be continued with the House of Delegates meeting on May 10 and the scientific session being held on May 11.

CME Program

It was VOTED that the President, at his discretion, with the help of the Committee on Medical Education, establish protocols for conferences in which CSMS would be involved in an organizational or financial way.

Auxiliary Report

Mrs. Joan Reed, President of the Auxiliary, reported that letters have been sent to the CSMS leadership seeking help in recruiting their spouses for membership in the Auxiliary. They are also planning an all-day conference on November 3rd on the subject of "The Troubled Teen" or "The Troubled Student." The event will be open to school counselors and nurses and hospital personnel. It is proposed to hold meetings in each county in September to stimulate enthusiasm and offer concrete help with local projects. It was suggested to Mrs. Reed that they communicate with the Connecticut Psychiatric Association for suggestions for speakers for their November 3rd conference.

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on July 20, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

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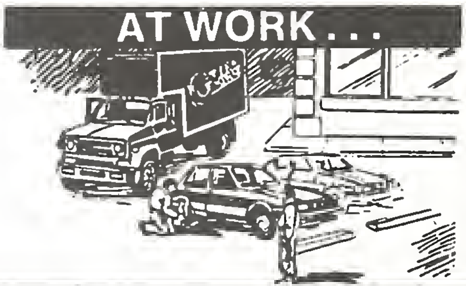

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CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

FAMILY PRACTICE

Looking for a board certified or qualified family practitioner or general internist for a very active practice. Details available on demand. Write or call: A.G. Gosselin, M.D., 65 Brown Ave., Jewett City, CT 06351. Phone: (203) 376-4471.

Expanding family practice in western Connecticut seeking BC/BE family practitioner to join busy six physician group during summer of 1989. Highly desirable area. No obstetrics. Send CV to, Brookfield Health Associates, P.C., 940 Federal Rd., Brookfield, CT 06804.

BC/BE Family physician to join busy family practice; beautiful location utilizing a Yale affiliated hospital. Send CV to 10 Cross Rd., Brookfield, CT 06805.

FAMILY/GENERAL PRACTICE

Urgent Care Centers providing acute and continuing care at two locations in Connecticut. Well rounded medical background and excellent patient relation skills required. Full and part time positions available. Competitive compensation, enjoyable work settings, and pleasant ancillary staff. Send CV to David E. Wilcox, M.D., PhysicianCare, 28 Main St., East Hartford, CT 06118 or call (203) 569-8644 for further information.

FAMILY PRACTICE/INTERNAL MEDICINE

Practice fore sale. One or two Internists or Family Practitioners to purchase established, active solo Primary Care practice, South Central Connecticut. Stately, spacious offices. Two open staff community hospitals close by. Please apply to CSMS, c/o FP/IM.

Stamford. Practice for Sale. One or two Internists or Family Practitioners to purchase established, active Primary Care Practice. Two open staff hospitals. Please reply to CSMS, c/o FP/ZZ.

INSTITUTIONAL/INDUSTRIAL

Positions available for per diem physicians to work with New England's largest mobile occupational health service. Excellent income potential. Call Richard Weltman, M.D. or Christopher Crowne, General Manager for more information. 243-0886.

INTERNAL MEDICINE

Established solo rheumatology practice in central Connecticut for sale. Opportunity for significant growth. Office space and equipment available. Please reply to CSMS, c/o IM/MJ.

Grove Hill Medical Center, a 48-member multispecialty group practice seeks two internists to join a busy 16-member internal medicine department. Guaranteed salary and earned bonus for three years with opportunity to advance to full partnership. Send CV to Norman S. Stachelek, Jr., Administrator, 300 Kensington Ave., New Britain, CT 06051.

Staff Physician. A nationally recognized geriatric health care provider is currently seeking an internist *preferably a gerontologist,* to join the staff at our 500+ resident multi-level licensed JCAH facility. We offer excellent work environment, Southern New England location, and full range of employee benefits. Salary commensurate with experience. Please send CV to CSMS, c/o HS. EOE.

Internist, lower Fairfield county. Minimum two years experience. Share attractive office part-time or with small investment amalgamate adjacent space in developing professional building. Ideal for physician wishing to resume working part-time with goal of full-time group practice. Send CV to CSMS, c/o IM/FB.

Wanted: BC/BE internist to join established practitioner in beautiful northwestern Connecticut. Excellent professional opportunity and quality of life. Send CV with letter of interest to Dr. Richard Collins, P.O. Box 1168, Sharon, CT 06069.

Two busy pulmonolgists/internist/critical care specialists in Hartford suburb are seeking an associate/partner. Modern 200-bed community hospital; opportunity for university affiliation; competitive financial and benefit package; central Connecticut location. Candidate should be BC in internal medicine and BE/BC in pulmonology / critical care. Special qualifications negotiable. Please reply with CV to: PULMONARY ASSOCIATES OF BRISTOL, Suite D25, 25 Newell Rd., Bristol, CT 06010.

MISCELLANEOUS

The State of Connecticut needs assistant Medical Examiners. They are physicians licensed to practice medicine in Connecticut, who serve as primary investigators of deaths coming under the jurisdiction of the Medical Examiners Office. Cases investigated (fatalities resulting from injury, drug abuse, and medically unattended deaths) are reported directly to the Farmington office. Case consultation with a staff forensic pathologist is available on a 24 hour basis. Compensation is $50 per case investigated, plus mileage and expenses. Physicians in group practice could serve as Medical Examiners on a rotational basis. Please contact James L. Luke, M.D., Chief Medical Examiner, 679-3980, for further information.

MISCELLANEOUS (Cont.)

Medical Directors. The Prudential, one of America's foremost insurance organizations, is presently looking for both a full-time Medical Director and a part-time Associate Medical Director. Must be able to oversee a variety of key functions involving credentialling, quality assurance, and utilization management of ambulatory and inpatient care. Applicants should be licensed, board certified, and possess a minimum of five years clinical experience. A background in utilization management, quality assurance, and/or managed care programs is preferred. Those interested should forward resume and salary requirements to: Personnel Director, The Prudential, 101 Merritt Seven, Norwalk, CT 06851. EOE M/F.

NEUROLOGY

Neurologist needed for *consulting* services for adults with developmental disabilities. Services required include initial and ongoing assessments as needed, recommendations for treatment, and consultation with primary physicians. All patients are residing in group homes (ICF/MR) in greater New Haven area and require a MEDICAID approved provider for medical services. Please call Jill Jensen, Client Services Coordinator, 389-6956

PEDIATRICS

Part-time associate to join three person pediatric group in a New Haven suburb located five miles from Yale-New Haven Medical Center. Earnings will be 50% of gross income. Call 248-4846 any evening after 7 P.M.

PRIMARY CARE

Primary physician needed for ongoing services for adults with developmental disabilities. Services required include annual physicals, ongoing office visits as needed and referrals for special services. All patients are residing in group home (ICF/MR) in Greater New Haven area, and require a MEDICAID approved provider for medical services. Please call Jill Jensen, Client Services Coordinator, 389-6956.

RADIOLOGY

Diagnostic Radiologist. Rapidly growing six member hospital/office-based radiology group in central Connecticut seeks BC/BE new member to start by January, 1989. Applicants must have recent training in MRI, CT, Ultrasound, Nuclear Medicine, and Angiography/Interventional Radiology. Excellent salary and benefits. Send CV to CSMS, c/o RAD/DD.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

DERMATOLOGY

June '89. Age 33. Licensed in Connecticut. Nat'l bds. AB cert. (Ped); AB elig. (Derm). MD, Duke University School of Medicine, Durham, NC; Int. and Res., Children's Hospital of Philadelphia, Philadelphia, PA and Albert Einstein, New York, NY. Prefers solo, group, or associate type practice in a medium-sized community. Write Diane M. Davidson, M.D., 18A Hollow Wood La., Greenwich, CT 06830.

July '89. Age 28. Nat'l bds. AB elig. MD, Dartmouth Medical School, Hanover, NH; Int., Cornell-New York Hospital, NY; Columbia-Presbyterian Medical Center, NY; Fellowship, St. Lukes-Roosevelt Hospital, NY. Prefers solo, group or associate type practice. Write Jonathan L. Held, M.D., Apt. B, 45 East End Ave., New York, NY 10028.

FAMILY PRACTICE

Dec '88. Age 35. Nat'l bds. AB elig. MD, Lodz Medical Academy, Lodz, Poland; Int., St. Clare's Hospital, NYC (Medicine); Res., Lutheran Medical Center, Brooklyn, NY (FP). Prefers solo, group, associate or institutional type practice. Write, Serge I. Kaftal, M.D., 4114 Ninth Ave., #4F, Brooklyn, NY 11232.

GENERAL PRACTICE

Sept. '88. Age 58. Licensed in Connecticut. MD, MeHarry Medical School, Nashville, TN; Int. and Res., Kings City Hospital, Brooklyn, NY. Prefers institutional or industrial type practice in a medium to large-sized community. Write, CSMS, BR/GP.

GENERAL SURGERY

Nov. '88. Age 31. Licensed in Connecticut. Nat'l bds. AB elig. MD., Loma Linda University School of Medicine, Los Angeles, CA; Int. and Res., Loma Linda University Medical Center. Prefers group associate or institutional type practice. Write, Karen Ulloth, M.D., 43 Front St., New Haven, CT 06513.

INTERNAL MEDICINE

July '89. Age 34. Nat'l bds. AB cert. MD, University of Michigan, Ann Arbor, MI; Int. and Res., Yale New Haven Hospital and The Hospital of St. Raphael, New Haven, CT; Fellowship, NY Medical College, Valhalla, NY. Prefers group or institutional type practice. Write CSMS, CM/IM.

INTERNAL MEDICINE

Gastroenterology. June '89. Age 31. Licensed in Connecticut. Nat'l bds. AB elig. MD, St. Louis University, St. Louis, MO; Int. and Res., University of Rochester, Rochester, NY; Fellowship, University of Connecticut, Farmington, CT. Prefers gastroenterology group or associate type practice in a medium-sized community. Write, Howard P. Fritz, M.D., 14 Baldwin Court, Newington, CT 06111.

OBSTETRICS AND GYNECOLOGY

July '89. Age 35. Nat'l bds. AB elig. MD, Harvard Medical School, Boston, MA; Int. and Res., NY University/Bellevue Medical Center, New York, NY. Prefers a group type practice in a medium-sized community. Write CSMS, c/o LS/OB.

RADIOLOGY

Jul. '89. *Diagnostic Radiology.* Age 33. Nat'l bds. AB elig. MD, George Washington University, Washington, DC; Int. and Res., Medical Center of Deleware, Newark, DE. Prefers group, associate, or institutional type practice in a medium to large-sized community. Write, Joseph M. Ullman, M.D., Apt. I, 148 Chestnut Crossing Dr., Newark, DE 19713.

July '79. *Neuroradiology.* Age 33. Nat'l bds. AB cert. MD, University of Cincinnati College of Medicine, Cincinnati, OH; Int., University of Cincinnati Medical Center, Cincinnati, OH; Res., University of Texas Health Science Center at Houston, Houston, TX; Fellowship, University of Cincinnati Medical Center. Prefers group or institutional type practice in a medium to large-sized community. Write Jerome G. Wiot, M.D., 803 East 6th St. #401, Newport, KY 41071.

UROLOGY

Immediately available. Age 49. Presently in practice. FLEX. AB cert. MD, Universidad Autonomade Guadalajara; Int., C.M.D.N.J. Rutgers Division, Hackensac Hospital; Res., Hahnemann Medical College and Hospital, San Francisco, CA and West Virginia University Medical Center. Prefers solo, group or associate type practice in a medium to large-sized community. Write, Joseph G. Colonna, M.D., 503 Captain Dement Dr., Waldorf, MD 20603.

Cardiac Surgery in Octogenarians: Are the Risks Too High?

STUART L. HOUSER, M.D., FAYYAZ H. HASHMI, M.D.,
TIMOTHY J. LEHMANN, M.D., AND SURENDRA K. CHAWLA, M.D.

ABSTRACT—Sixty-nine octogenarians underwent cardiac surgery in a private group practice from 1 January 1984 through 31 December 1987. These 27 males and 42 females with an average age of 82.1 years represented 3.3% of the group's total cardiac experience over the same four years. Two thirds of these patients underwent aortocoronary artery bypass alone. The incidence of valve replacement, valve replacement plus aortocoronary artery bypass, and miscellaneous procedures was 13.0%, 17.4%, and 2.9% respectively. The overall operative mortality rate of 14.3% in the octogenarians was significantly higher than the 2.7% operative mortality rate in all other patients undergoing cardiac surgery by this group during the same four-year period. Causes of operative death are analyzed. Late mortality rate of 16.9% occurred at a mean of 14.2 months postoperatively. Ninety-six percent of the survivors as of January 1988 were pleased that they had had their cardiac surgery, indicating improvement in their quality of life during the one to forty-eight months (mean 18.8) postoperatively.

In conclusion, this report confirms the higher risk of operative mortality in octogenarians compared with younger patients undergoing cardiac surgery and analyzes the morbidity and causes of death in these patients. The gratifying improvement observed in the elderly survivors, however, justifies this group's policy of offering cardiac surgery to octogenarians for the accepted indications.

This review analyzes the experiences with octogenarians in a private cardiac surgical practice. Its purpose is to determine the prevalence of octogenarians in this group's practice, their operative mortality rates compared to younger patients in the same practice, and their follow-up status after discharge. Finally, these patients are compared with similar octogenarians reported in the current literature in order to define better the appropriateness of cardiac surgery in this population.

Data Base

From 1984 through 1987, 2073 patients underwent cardiac surgery in this group's practice. There were 69 octogenarians representing 3.3% of the patients. Although the mean age of all patients over the four years has not changed appreciably, the number of octogenarians has increased over the past two years (see Table 1). The 27 males and 42 females had a mean age of 82.1 years and included one black patient in the otherwise white population. Forty-six (66.7%) patients had pure coronary artery disease. Nine patients (13.0%) presented with valvular heart disease, predominantly involving the aortic valve. Fourteen patients (20.3%) presented with both valvular heart disease and coronary artery disease. The number of patients undergoing simple aortocoronary artery bypass, valve replacement, and valve replacement with aortocoronary artery bypass were 46 (66.7%), nine (13.0%), 12 (17.4%), respectively. Two miscellaneous procedures (2.9%) included aortocoronary artery bypass plus ventricular septal defect repair and aortic valve replacement plus ascending aortic aneurysm repair.

Of the 59 patients undergoing aortocoronary artery bypass, either alone or combined with valve replacement, 46 patients (78.0%) underwent bypass using saphenous vein alone, 11 (18.6%) with vein plus internal mammary artery, and two (3.4%) with internal mammary artery alone. The mean number of grafts per patient was 3.0. Of the 23 valve prostheses placed, 19 (82.6%) were Carpentier-Edwards porcine valves, and four (17.4%) were St. Jude valves.

Results

Postoperative complications were predominantly cardiac, the commonest of which were supraventricular arrhythmias which occurred in one third of the patients. The incidence of various complications and their association with mortality are shown in Table 2. Respiratory insufficiency was the commonest pulmonary complication. Urinary complications included renal insufficiency, urinary tract infections and postoperative urinary retention. Neurologic complications included encephalopathy,

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Table 1

TOTAL CARDIAC EXPERIENCE (1984 - 1987)

Year	*N*	*Age in Years: Range (Mean)*	*Octogenarians*
1984	415	32-84 (62.7)	11 (2.7%)
1985	524	33-84 (62.7)	14 (2.7%)
1986	585	21-88 (62.4)	23 (3.9%)
1987	549	16-91 (64.3)	21 (3.8%)
Total	2,073		69 (3.3%)

Table 2

POSTOPERATIVE MORBIDITY IN OCTOGENARIANS

Complications	*Incidence (%)*	*Association with Mortality (%)*
Cardiac	57.1	17.5
Pulmonary	37.7	24.0
Urinary Tract	15.9	30.0
Neurologic	13.0	12.5
Gastrointestinal	7.2	40.0
Bleeding	5.8	0.0
Sternal Dehiscence	4.3	0.0
Sepsis	2.9	100.0

peripheral neuropathy and stroke. Sternal dehiscence and postoperative mediastinal bleeding requiring exploration were not associated with mortality. However, gastrointestinal complications and sepsis were accompanied by high mortality rates.

Intra-aortic balloon pumps were inserted preoperatively in nine patients and postoperatively in one, for an incidence of 14.5%. Four of these patients (40%) died postoperatively. The survivors were free of morbidity relating to the balloon. However, three attempts to insert balloons were unsuccessful because of peripheral vascular disease, and in two of these patients death ensued.

The overall mortality rate in these octogenarians was 14.3%: 15.2% following aortocoronary artery bypass, 20% following valve replacement, and 8.3% following combined valve replacement and aortocoronary artery bypass. As seen in Table 3, the operative mortality rate in the octogenarians was higher than that in the septuagenarians (P = 0.005) and even higher than the overall mortality rate of 3.1% from 1984 to 1987. All ten operative deaths in the octogenarians occurred in patients who were assigned to New York Heart Association Class IV. Five of these patients were operated as emergencies and four required intra-aortic balloon pump support; six had acute subendocardial infarctions preoperatively. The causes of death were pump failure (4), sepsis (2), stroke (2), pulmonary embolism (1), and aspiration pneumonia (1).

Table 3

OPERATIVE MORTALITY RATES IN TOTAL SERIES (%)

Year	*Under 70*	*Under 80*	*70-79*	*80-89*	*Over-all*
1984:	1.6	2.5	5.3	9.1	2.7
1985:	2.3	3.7	7.9	21.4	4.2
1986:	0.5	1.8	5.4	21.7	2.6
1987:	2.9	2.8	2.8	4.8	2.9
Mean	1.8	2.7	5.4	14.3	3.1
		—P = 0.005—			

The mean hospital stay of the patients surviving their operations was 19.5 days, ranging from six to ninety-seven days. The nonsurvivors died after a mean of 31.5 (0-64) days postoperatively. The mean hospital stay of the entire group of octogenarians was 21.2 days.

One hundred percent follow-up of these octogenarians was obtained as of early January 1988. Ninety-six percent of the patients indicated that they were glad that they had had their cardiac surgery. This follow-up represents one to forty-eight months, or a mean of 18.8 months, postoperatively. The patient who was not happy about the surgery thought his aortic valve replacement plus aortocoronary artery bypass was not necessary and that he could have been treated medically. One octogenarian, only one month after aortocoronary artery bypass, said it was too soon to say.

Discussion

Although the male to female sex ratio in our total series over the past four years has been 2.4:1, the same ratio in the octogenarians over the same four year period is 0.6:1. The greater number of females in the group of octogenarians is not surprising, since the National Census Bureau currently reports[1] a male to female ratio of 0.5:1 among octogenarians in this country.

These data are consistent with findings from the Coronary Artery Surgery Study reported in *Circulation* in 1983,[2] which documented a higher surgical risk and lower five-year survival rate in patients over 65 years of age compared to those under 65 years of age undergoing cardiac surgery. Table 4 compares our results with the relatively few data[3,4] in the current literature concerning cardiac surgery in octogenarians. Naunheim and his group[4] reported a 75% operative mortality rate in 80-year-old patients following emergency aortocoronary artery bypass. Indeed, five of the ten operative deaths in the current report occurred in patients undergoing emergency cardiac procedures. It follows then that the high operative mortality risk in octogenarians might be decreased if emergency cardiac surgery were withheld in these elderly patients.

Table 4

MORTALITY RATES OF OCTOGENARIANS POST-CARDIAC SURGERY (%)

Authors	*ACB*	*AVR*	*MVR*	*DVR*	*VR & ACB*
Tsai, et al. (1985)	5.2	0	50	0	30
			——6.5——		
Naunheim, et al. (1987)	21.7				
Houser, et al. (1988)	15.2	25	0	0	8.3
			——20.0——		

ACB = Aortocoronary bypass
AVR = Aortic valve replacement
MVR = Mitral valve replacement
DVR = Double valve replacement
VR & ACB = valve replacement + aortocoronary bypass

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Renal Oncocytoma: A Benign Tumor Often Misdiagnosed as Malignant

Case Reports and a Diagnostic Protocol

PETER F. D'ADDARIO, M.D. AND LEROY M. NYBERG, JR., M.D.

ABSTRACT—Renal oncocytoma is a rare renal tumor. Its diagnosis is important because therapy is quite different from renal cell carcinoma with which it is often confused. Pathognomic angiographic findings include a spoke-wheel arterial phase and homogeneous nephrogram. These findings are present in only 42% of published cases. The pathognomic computerized tomographic (CT) scan findings of homogeneity and central scar are present in 23% of the cases. A protocol is presented which uses sequential angiographic and CT evaluation to increase the diagnostic rates for this benign tumor. Four cases are used to demonstrate the efficacy of using these procedures preoperatively to aid in the differentiation of benign from malignant tumors.

Introduction

Renal oncocytoma is an unusual pathologic entity which constitutes up to 6% of all renal tumors.[1] However its diagnosis is important because therapy is quite different from renal-cell carcinoma with which it is often confused. Recent advances in computerized tomographic (CT) scanning and sonographic imaging have made it possible to view the ultrastructure of renal masses. An increased awareness of this tumor and its typical radiographic findings is needed to prevent unnecessary surgery. This is especially true in those cases where preservation of functioning renal parenchyma is a major concern. Four case reports and a review of the literature are presented to demonstrate how a combined sequential diagnostic approach can lead to an improved preoperative diagnosis.

Case Reports

Case 1 - J.F.

A 49-year-old male, during abdominal exploration for removal of symptomatic gallstones, was found to have a large left renal mass. A follow-up CT scan showed a large, smooth, lobulated mass of the left kidney confined within Gerota's fascia. The mass was noted to have

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Table 1

TOTAL CARDIAC EXPERIENCE (1984 - 1987)

Year	*N*	*Age in Years: Range (Mean)*	*Octogenarians*
1984	415	32-84 (62.7)	11 (2.7%)
1985	524	33-84 (62.7)	14 (2.7%)
1986	585	21-88 (62.4)	23 (3.9%)
1987	549	16-91 (64.3)	21 (3.8%)
Total	2,073		69 (3.3%)

Table 2

POSTOPERATIVE MORBIDITY IN OCTOGENARIANS

Complications	*Incidence (%)*	*Association with Mortality (%)*
Cardiac	57.1	17.5
Pulmonary	37.7	24.0
Urinary Tract	15.9	30.0
Neurologic	13.0	12.5
Gastrointestinal	7.2	40.0
Bleeding	5.8	0.0
Sternal Dehiscence	4.3	0.0
Sepsis	2.9	100.0

peripheral neuropathy and stroke. Sternal dehiscence and postoperative mediastinal bleeding requiring exploration were not associated with mortality. However, gastrointestinal complications and sepsis were accompanied by high mortality rates.

Intra-aortic balloon pumps were inserted preoperatively in nine patients and postoperatively in one, for an incidence of 14.5%. Four of these patients (40%) died postoperatively. The survivors were free of morbidity relating to the balloon. However, three attempts to insert balloons were unsuccessful because of peripheral vascular disease, and in two of these patients death ensued.

The overall mortality rate in these octogenarians was 14.3%: 15.2% following aortocoronary artery bypass, 20% following valve replacement, and 8.3% following combined valve replacement and aortocoronary artery bypass. As seen in Table 3, the operative mortality rate in the octogenarians was higher than that in the septuagenarians (P = 0.005) and even higher than the overall mortality rate of 3.1% from 1984 to 1987. All ten operative deaths in the octogenarians occurred in patients who were assigned to New York Heart Association Class IV. Five of these patients were operated as emergencies and four required intra-aortic balloon pump support; six had acute subendocardial infarctions preoperatively. The causes of death were pump failure (4), sepsis (2), stroke (2), pulmonary embolism (1), and aspiration pneumonia (1).

Table 3

OPERATIVE MORTALITY RATES IN TOTAL SERIES (%)

Year	*Under 70*	*Under 80*	*70-79*	*80-89*	*Over-all*
1984:	1.6	2.5	5.3	9.1	2.7
1985:	2.3	3.7	7.9	21.4	4.2
1986:	0.5	1.8	5.4	21.7	2.6
1987:	2.9	2.8	2.8	4.8	2.9
Mean	1.8	2.7	5.4	14.3	3.1
			—P = 0.005—		

The mean hospital stay of the patients surviving their operations was 19.5 days, ranging from six to ninety-seven days. The nonsurvivors died after a mean of 31.5 (0-64) days postoperatively. The mean hospital stay of the entire group of octogenarians was 21.2 days.

One hundred percent follow-up of these octogenarians was obtained as of early January 1988. Ninety-six percent of the patients indicated that they were glad that they had had their cardiac surgery. This follow-up represents one to forty-eight months, or a mean of 18.8 months, postoperatively. The patient who was not happy about the surgery thought his aortic valve replacement plus aortocoronary artery bypass was not necessary and that he could have been treated medically. One octogenarian, only one month after aortocoronary artery bypass, said it was too soon to say.

Discussion

Although the male to female sex ratio in our total series over the past four years has been 2.4:1, the same ratio in the octogenarians over the same four year period is 0.6:1. The greater number of females in the group of octogenarians is not surprising, since the National Census Bureau currently reports[1] a male to female ratio of 0.5:1 among octogenarians in this country.

These data are consistent with findings from the Coronary Artery Surgery Study reported in *Circulation* in 1983,[2] which documented a higher surgical risk and lower five-year survival rate in patients over 65 years of age compared to those under 65 years of age undergoing cardiac surgery. Table 4 compares our results with the relatively few data[3,4] in the current literature concerning cardiac surgery in octogenarians. Naunheim and his group[4] reported a 75% operative mortality rate in 80-year-old patients following emergency aortocoronary artery bypass. Indeed, five of the ten operative deaths in the current report occurred in patients undergoing emergency cardiac procedures. It follows then that the high operative mortality risk in octogenarians might be decreased if emergency cardiac surgery were withheld in these elderly patients.

Table 4

MORTALITY RATES OF OCTOGENARIANS POST-CARDIAC SURGERY (%)

Authors	*ACB*	*AVR*	*MVR*	*DVR*	*VR & ACB*
Tsai, et al. (1985)	5.2	0	50	0	30
			——6.5——		
Naunheim, et al. (1987)	21.7				
Houser, et al. (1988)	15.2	25	0	0	8.3
			——20.0——		

ACB = Aortocoronary bypass
AVR = Aortic valve replacement
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DVR = Double valve replacement
VR & ACB = valve replacement + aortocoronary bypass

Dorros and associates[5] acknowledge a significant operative mortality rate in geriatric patients (over 70 years old) undergoing aortocoronary artery bypass but found good long-term survival rates in these patients if they survived their surgery. The current study found that of those octogenarians who survived their surgery, almost all were pleased with their decisions to have their surgery done. This finding would indicate an improvement in their New York Heart Association classification after a mean of one and one half years postoperatively compared to their preoperative status. This gratifying improvement in quality of life in these elderly patients is, in the opinion of these authors, a reasonable goal and, as other authors[6] suggest, justifies offering cardiac surgery to octogenarians for the appropriate indications.

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ABSTRACT—Renal oncocytoma is a rare renal tumor. Its diagnosis is important because therapy is quite different from renal cell carcinoma with which it is often confused. Pathognomic angiographic findings include a spoke-wheel arterial phase and homogeneous nephrogram. These findings are present in only 42% of published cases. The pathognomic computerized tomographic (CT) scan findings of homogeneity and central scar are present in 23% of the cases. A protocol is presented which uses sequential angiographic and CT evaluation to increase the diagnostic rates for this benign tumor. Four cases are used to demonstrate the efficacy of using these procedures preoperatively to aid in the differentiation of benign from malignant tumors.

Introduction

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Case Reports

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calcifications and a central lucency consistent with scarring. No vascular or nodal involvement was evident. The patient underwent a left radical nephrectomy. The pathologic examination showed a 10 cm oncocytoma with a central stellate scar.

Case 2 - J.Co.

A 53-year-old male presented with symptoms of bladder outler obstruction. An intravenous urogram showed a right renal mass. Ultrasound showed a solid nonhomogeneous mass with a smooth margin. No central scar was appreciated. An arteriogram showed a solid tumor, with a homogeneous tumor blush. Typical neoplastic vessels were absent, but a spoke-wheel pattern was not evident. The patient underwent a right radical nephrectomy. Pathologic findings were a 7 cm oncocytoma with a 1.5 cm central scar. Focal areas of hemorrhage and necrosis were noted in approximately 50% of the specimen.

Case 3 - J.Ca.

A 60-year-old white male presented with a one-year history of bloody stools. A rectal biopsy showed an adenocarcinoma. On a barium enema, a mass was noted in the right kidney, and ultrasound revealed a complex 12 cm cyst on the right, and a smooth 4 cm isoechoic left renal mass. A CT scan confirmed a complex cystic mass on the right and a homogeneous, smooth tumor without a central scar on the left. Angiography showed no typical neoplastic vessels on either side. A homogeneous nephrogram was noted on the left. An excisional biopsy of the right cyst demonstrated cystic clear-cell carcinoma. Excision of the mass in the left kidney showed oncocytoma. A right radical nephrectomy was performed.

Case 4 - H.N.

A 74-year-old white male complained of vague left sided abdominal pain. An abdominal radiograph showed a left renal mass. A CT scan showed a 5 cm smooth solid mass extending from the posterior inferior pole of the left kidney. Focal areas of decreased density in the center of the mass were interpreted as heterogeneity consistent with renal carcinoma. Identical findings were noted on ultrasound. A left radical nephrectomy was performed. Pathologic examination showed a 5 cm oncocytoma without a central scar. There were focal areas of hemorrhage and necrosis involving the central portion of the mass.

Discussion

The term oncocytoma was a term first used in 1932 to describe an adenolymphoma of the prostate gland.[2] These transformed cells were larger than their cells of origin, and had a fine, granular eosinophilic cytoplasm with abundant mitochondria. Oncocytomas have since been described in the thyroid, parathyroid, pituitary, adrenal, and kidney.

In the kidney oncocytomas are histologically made up of repetitive fields of oncocytes in a tubular or glandular configuration; these cells are thought to be derivatives of proximal tubular cells.[10]

Usually asymptomatic, oncocytomas are commonly noticed as an incidental finding in patients being evaluated for other problems. On gross pathologic section, the typical oncocytoma is usually 4 to 5 cm in diameter, well-defined, smooth, homogeneous, and often has a central stellate scar.[16] Comparably sized renal-cell carcinomas may also be well-defined but are often not homogeneous. Hemorrhage and tumor necrosis may be seen, and the central scar will be absent.

Radiographically oncocytomas appear on abdominal flat films and intravenous pyelograms as nonspecific renal masses. Renal scans show cold spots due to lack of uptake of radionuclide. However, renal-cell carcinoma presents with an identical pattern and radionuclude imaging has not proven helpful in the differentiation of the two.

Weiner described a typical arteriographic pattern in two patients with oncocytomas. The characteristic findings were a spoke-wheel pattern arterial phase, homogenous nephrogram, smooth margins, and absence of neoplastic vasculature. In the spoke-wheel pattern, larger vessels course around the tumor feeding finer vessels which enter the tumor radially.[19] A distinct, smooth margin was noted in almost all cases, as was a lack of *obviously* neoplastic vessels. In our review, a spoke-wheel vascular pattern and homogeneous nephrogram were present in 56% and 58% of cases respectively. However, to make the diagnosis of oncocytoma on angiography alone both spoke-wheel pattern and homogeneity must be present. These two findings occurred together in only 42% of cases studied angiographically.

Ultrasound and CT scan have provided a way to determine the internal architecture of renal masses. Features such as parenchymal uniformity, lack of hemorrhage and necrosis, and the presence of a central scar have aided in the diagnosis of oncocytoma.

One of the most consistent findings in CT scans of oncocytoma is tumor homogeneity.[13] The only exceptions to this are occasional calcifications and necrosis as in two of our four patients. We presume the necrosis to be a natural progression in the tumor as it outgrows its blood supply, but before it can consolidate and scar. At that stage oncocytoma is indistinguishable from renal cell carcinoma on CT scan. While distinct central scar in an otherwise homogeneous tumor is virtually diagnostic of oncocytoma,[16] it was seen in only 23% of patients studied by CT scan.

Multiple reports have shown the efficiency of ultrasound in studying oncocytoma. Features studied are identical to CT scan. However, ultrasound was consistently inferior to CT scan due to its higher false negative rate. Quinn recommends both both CT and ultrasound in evaluating renal masses in order to avoid the possibility of a false positive result on CT alone.

Excellent results were noted by Quinn in 1984, who reported on 18 cases of oncocytoma compared with 18 matched cases of renal cell carcinoma, utilizing CT scan and ultrasound in sequence with arteriography to increase his diagnostic ability. Oncocytoma was suggested if a stellate scar was identified within an otherwise homogeneous tumor on ultrasound and CT scan. If the mass was homogeneous without scar, angiography was performed looking for a spoke-wheel configuration and a homogeneous tumor blush. By using these criteria, he retrospectively made the correct diagnosis in 16 of 18 cases of oncocytoma with no false positives. As each modality examines different characteristics of the tumor, a minority of patients will show pathognomonic findings with each test. However, by combining these studies it may be possible to increase the diagnostic yield.

We recommend CT scan for all patients with renal mass. If pathognomonic findings of oncocytoma are found, an arteriogram may be desired to define vascular anatomy in preparation for a limited resection. If CT findings are questionable, ultrasound may help define the internal architecture. If the nature of the lesion is still not clear, an angiogram looking for a spoke-wheel pattern would be appropriate. If the CT scan is consistent with renal cell carcinoma an angiogram to define vascular anatomy and venous involvement may be appropriate.

Summary

Renal oncocytoma is an unusual pathologic entity which constitutes about 6% of all renal tumors. Its diagnosis is important because therapy is quite different from renal carcinoma with which it is often confused. Attempts to diagnose oncocytoma radiographically have been only partially successful. Each diagnostic modality presents the clinician with typical but nondiagnostic findings as well as pathognomic features in a minority of patients. Because CT scanning and angiography look at different tumor features they should be used sequentially. The protocol of CT scan followed by angiography would diagnose a variety of renal masses besides renal-cell carcinoma and oncocytoma. If pathognomonic findings of either oncocytoma or renal cell carcinoma were found on CT scan angiography would be unnecessary. The diagnosis of oncocytoma could then be confirmed by a percutaneous biopsy and pathological diagnosis. Pathologically confirmed oncocytomas should then be followed by CT scanning at six-month intervals for three years to ensure that no malignant cells were present with this benign tumor.

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Testicular Feminization Syndrome Presenting in a 78-Year-Old Patient

GEORGE M. KHOURY, M.D. AND ROBERT P. FERGUSON, M.D.

ABSTRACT—Testicular feminization syndrome (TFS) is an inherited sex-linked recessive disorder characterized by end-organ insensitivity to androgens. Patients present with a female phenotype, a male karyotype, normal female breast development with immature nipples, scanty axillary and pubic hair, and lack of müllerian structures. Testes are present either in the abdominal cavity, inguinal canal, or labia majora. The majority of cases present prior to age 30 with either inguinal masses or primary amenorrhea.

We report a case of an elderly phenotypic female who was first diagnosed as demonstrating the syndrome of testicular feminization upon discovery of an atrophic testis found during surgery for an incarcerated inguinal hernia.

Case Report

A 78-year-old white female presented to the Mount Sinai Hospital emergecy room following the sudden appearance of a painful mass in the right groin. The patient had been under treatment for hypertension and atherosclerosis; her private physicians were unaware of any other medical problems. At the time of admission to the hospital the patient stated that she had noticed an intermittent right inguinal mass for at least ten years.

She was 5 ft. 2½ in. tall and looked younger than her stated age. She had an irreducible right indirect inguinal hernia. She was taken to the operating room and an incarcerated indirect right inguinal hernia was found; after reduction of the hernia, a mass was excised at the distal tip of the hernia sac. On pathological examination atrophic testicular tissue was found with hyalinization of the tubules, interstitial fibrosis, Leydig cell hyperplasia, and an epididymis. Cytogenetic studies revealed 96% XY and 4% XO (the 4% aneuploidy was attributed to age-related disunion).

The patient later admitted to being less than candid with her current and prior physicians. She understood little about her disease except that she had "female problems." As a child she had been treated for multiple hernias with trusses; later as an adolescent she saw a number of physicians for primary amenorrhea and was told that she had "normal female organs" but would be sterile. Her first coitus at age 21 was associated with dyspareunia and postcoital bleeding. She denied further dyspareunia thereafter. She married at age 22 and for approximately the next 25 years "went through the motions" of menstruations for four days each month "for the benefit of my husband." Eleven years prior to admission, she noticed a right inguinal hernia that subsequently became recurrent. The patient had six siblings, five of whom were female. A number of her sisters did not have children but she was unsure of the details. One sister did have four children, three of whom were female. Two of these young women had primary amenorrhea.

Based on this history and the clinical and pathological findings, we diagnosed testicular feminzation syndrome. The patient declined further evaluation, and consequently additional endocrinologic evaluation was not done.

Discussion

The presenting sign of TFS in young patients is often an inguinal hernia. Little data exist regarding the frequency of inguinal hernias in older cases of TFS, attributable at least in part to the rarity of presentation in this age group. Only ten cases of TFS have been reported in the world literature presenting at age fifty or older and only two greater than age sixty-five.[1] We believe that this is the oldest reported patient in the North American literature.

Consideration was given to removal of the presumed other undescended gonad because of the risk of malignant degeneration. However, the patient declined further treatment, which was not urged upon her. Malignant degeneration has not been reported in the few cases of older TFS patients and it is rare in TFS in general. While there is a 28% to 35% risk of malignant degeneration in true gonadal dysgenesis, there is at most a 5% to 8% risk reported for TFS.[2]

This patient's last comprehensive medical evaluation took place in 1930. TFS was not fully identified until 1953.[3] She managed to conceal her amenorrhea from her husband of fifty-six years. Her sterility apparently has never been a major concern to her, and by all accounts her marriage has been an exceptionally strong one.

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Her stature was unusually short for TFS. In contrast, her sexual orientation and strenuous adaptive behavior are a remarkable demonstration of the psychological characteristics typical of TFS patients. Their psychosocial orientation is female and they commonly adapt well to married life. However, they have been reported to lack maternal drive (possibly related to androgen effect on the brain) and may have great concern over their ability to maintain normal relationships with their sexual partners.[4]

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THE CANDIDATES SPEAK

Governor Dewey

"Compulsory, socialized medicine is no good. It cannot be done. Accordingly I have spent the last two years of my life knocking down every proposal that anybody has made to regiment the medical profession and the people of America through any program of socialized medicine. By making speeches publicly at every meeting of people that would listen to me on the subject, I have made clear that we have actually been through this thing, this thing which cost the people of my state $200,000 to find out about. I don't want the money wasted. I don't want to run the risk of happening to the health of our people what has happened to the health of every group of people which has tried to drag the medical profession down to the Socialists' level. You won't drag anything up. You will enlarge the volume of medical care but utterly destroy the quality of medical care the minute you try that process.

"Now, some people come to me and say this is just a negative approach, Governor, What do you suggest? Well, my first answer is that if a thing is evil, the first job is to convince people that it is evil and thoroughly evil and destroys everything that we believe in. Then if you have succeeded in doing that, and can get out of their minds that by passing a law you can magically create something which does not now exist, you have made the most of the progress. You know, we Americans are the greatest passers of law to solve problems in the world. . . .

"This idea which has been shared by the last two occupants of the White House that you can improve medical care by passing a law must be stopped. We must get vast broad educational ideas to the people, as to the quality of care that now exists and as to a greater program that is going forward by men of medicine, we must have a program all can take a share in. Let's get some good public relations men and get the business man to do his share and get the lawyers and the labor leaders and everybody else. They are the ones who will lose most of all, if freedom in medicine is ever lost. . . .

"Let's get them all understanding and working and they won't want to be putting you in jail with socialized medicine. I am unalterably opposed to it. It won't work and will lower our standard, and I venture our death rate would mount from the very day it was passed. I think there is a positive approach. I don't think the doctors ought to have to handle that approach but you do have to stimulate other people to take part in this job and lead the parade."

President Truman

"The greatest gap in our social security structure is the lack of adequate provision for the nation's health. . . . I have often and strongly urged that this condition demands a national health program. The heart of the program must be a national system of payment for medical care based on well tried insurance principles. . . . Our ultimate aim must be a comprehensive insurance system to protect all our people equally against insecurity and ill health.

"Such a system of (required) prepayment should cover medical, hospital, nursing, and laboratory services. It should also cover dental care—as fully and for as many of the population as the available professional personnel and the financial resources of the system permit. The ability of our people to pay for adequate medical care will be increased if, while they are well, they pay regularly into a common health fund, instead of paying sporadically and unevenly while they are sick. This health fund should be built up nationally, in order to establish the broadest and most stable basis for spreading the costs of illness, and to secure adequate financial support for doctors and hospitals everywhere. If we were to rely on state-by-state action only, many years would elapse before we had any general coverage . . .

"I am in favor of the broadest possible coverage for this insurance system. I believe that all persons that work for a living and their dependents should be covered under such an insurance plan. This would include wage and salary earners, those in business for themselves, professional persons, farmers, agricultural labor, domestic employees, and employees of nonprofit institutions and their families. In addition, needy persons and other groups should be covered through appropriate premiums paid for them by public agencies."

— From the *Connecticut State Medical Journal*, October 1948.

Important Advances in Clinical Medicine

Physical Medicine and Rehabilitation

The Scientific Board of the California Medical Association presents the following inventory of items of progress in physical medicine and rehabilitation. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in physical medicine and rehabilitation that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Physical Medicine and Rehabilitation of the California Medical Association and the summaries were prepared under its direction.

Somatosensory Evoked Potentials in Monitoring Spinal Operations

SPINAL cord monitoring is an intraoperative, functional evaluation of spinal cord ascending and descending pathways. While all spinal cord pathways should ideally be evaluated, currently the most practiced application uses somatosensory evoked potentials (SSEPs) to monitor the posterior columns, a major ascending pathway of the spinal cord. Afferents of peripheral nerves enter the spinal cord and ascend in the posterior columns to the medulla, synapsing in the dorsal column nuclei. From there fibers ascend through the medial lemniscus to the thalamus and on to the cerebral cortex.

Somatosensory evoked potentials are recorded repeatedly throughout the operation. The recording principles are similar to those used clinically in that stimulation sites are usually large peripheral nerves—tibial, femoral, peroneal, ulnar, or median nerve, depending on the region of spinal cord or roots at risk. Electrophysiologic recordings are made along the afferent pathway, first of the peripheral nerve to ensure a neural message has been activated and, second, after it has passed the surgical field—that is, epidural space, cervical spine lamina, and the scalp. These signals are of low amplitude, 0.5 to 3 μV, and thus require signal averaging. Epidural electrodes or insulated needle electrodes placed on the vertebral lamina provide a stable response sufficient to reduce the difficulties of a faint signal, electrically noisy environmments, and varying responses. Recordings with epidural or insulated needles have been shown to provide a more sensitive monitor of spinal cord function than scalp recordings.

Somatosensory evoked potential monitoring has been used in surgical procedures for scoliosis, spondylolisthesis, fractures, tumors, arteriovenous malformations, dorsal root entry zone lesions, and peripheral nerve repair. Usually SSEP monitoring substitutes for an intraoperative "wake up" test. A loss or reduction of an evoked potential, when reported to the surgeon, usually results in corrective action and signal recovery. Altered SSEPs were recently reported in three cases that were associated with postoperative neurologic deficits despite corrective procedures. Epidural response amplitudes were reduced by more than 30% in 8.5% of limbs studied, suggesting that the technique is sensitive to minor changes in spinal cord conduction.

A future possibility, as indicated by current research, also exists for the monitoring of descending pathways by stimulating the motor fibers of the cortex or spinal cord.

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Scuba Diving for the Handicapped

IN the past, it was considered physicians' responsibility to weed out of eligibility for scuba diving all patients with a neuromuscular disease or other physical disability. Recently, it has become recognized that scuba diving offers mobility-impaired persons a unique opportunity for three-dimensional movement through a gravity-free environment.

Training programs, performance standards, and levels of certification have been developed based not on medical diagnosis but on disabled persons' "buddy dependency" or ability to take care of themselves and their diving companions. This system has already provided access to the submerged two thirds of our planet to persons with paraplegia, quadriplegia, hemiplegia, amputation, cerebral palsy, poliomyelitis, and sensory disabilities such as blindness.

Three levels of certification are recognized based on the degree of "buddy dependency" of a diver and the ability to help a fellow diver in distress:

- *Level A.* Able to provide equal assistance to a fellow diver in case of an emergency. Qualified to dive with another certified diver, including a level A diver.
- *Level B.* Able to care for self in case of an emergency, but cannot provide a fellow diver equal assistance. Qualified to dive with two certified divers who may be at level A.
- *Level C.* Able to safely use scuba gear underwater, but unable to effectively care for self or fellow diver in case of an emergency. Must dive with two certified divers, one of whom has been trained in diver rescue.

Safety precautions with special significance to disabled divers include the conservative use of dive tables to avoid decompression sickness, caution to avoid abrasions and puncture wounds on insensate extremities, and protection against sunburn or chilling by wearing suitable clothing.

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Electrodiagnosis in Bladder, Bowel, and Sexual Dysfunction

BLADDER, bowel, and sexual disorders are common symptoms of peripheral and autonomic neuropathies, sacral and peripheral nerve injuries, and diseases that affect the brain and spinal cord. New electrophysiologic techniques permit the precise localization and quantification of disturbances in neuromuscular innervation of the bladder, the bowel, and the sex organs. Sacral electrodiagnosis is of clinical importance in the evaluation and subsequent rehabilitation of patients with cervical and lumbar disk disease; pelvic fractures and tumors; arachnoiditis; peripheral neuropathy; spinal cord injury; transverse myelitis; spinal cord tumor; multiple sclerosis; and neurogenic bladder, bowel, and sexual dysfunction.

Electromyography of the perineal sphincters is well established as an important tool in the study of urinary and fecal incontinence and retention. By means of a needle electrode placed directly into the anal or urethral sphincter, signs of acute and chronic degeneration can be found in the striated muscles innervated by the lower sacral segments. Another way to analyze electromyographic activity is to record electrophysiologic patterns by summation and electronic integration. When done with surface or needle electrodes in conjunction with urodynamic studies, detrusor-sphincter dyssynergia can be documented.

The integrity of sacral spinal cord segments S-2, -3, and -4 has classically been evaluated by manually stimulating the glans penis or glans clitoris and observing or palpating contraction of the external anal sphincter. The evaluation of the sacral reflex has recently been refined to the point where sacral cord neural integrity can be recorded and objectively quantified. The bulbocavernosus reflex is evoked electrically by providing an electrical stimulus to the pudendal nerve of the penis or clitoris and recording from the bulbocavernosus muscle, the external anal sphincter, or the external urethral sphincter. The resultant reflex electromyographic deflection, which usually occurs up to 45 ms after stimulation, is an indicator of the integrity of the peripheral somatic sensory and motor pudendal pathways as well as conduction through the sacral spinal cord. Other indicators of sacral neuropathy include a diminished amplitude of the evoked response (less than 50 to 200 μV) and the need for a higher-than-usual stimulus intensity. When the latency of the reflex is more than 7 ms slower on one side than the other, a unilateral lesion is probable, as with a herniated nucleus pulposus. In patients with severe conus medullaris or cauda equina lesions the reflex cannot be elicited at all.

Abnormalities of the autonomic nervous system are often responsible for bladder, bowel, and sexual dysfunction. Applying an electrical stimulus to the proximal portion of the urethra stimulates the afferent autonomic innervation through the hypogastric nerves. The evoked efferent response from the anal sphincter usually occurs within 70 ms after stimulation. This technique significantly enhances the accuracy of the diagnosis of autonomic neuropathies.

Recent applications of digital computer microelectronic averagers have opened the way to spinal and cortical evoked response testing. Somatosensory evoked responses subsequent to pudendal nerve stimulation may be recorded over the L-1 spine at the level of the conus medullaris and over the scalp in the region of the sensory cortex. Spinal evoked responses are of low amplitude—0.1 to 0.5 μV—and difficult to elicit if a patient is obese or if there is even a mild peripheral neuropathy. The cortical evoked response, however, may be consistently recorded electroencephalographically from an electrode placed in the midline of the scalp 2 cm behind the C-2 recording site using the international 10 to 20 electrode placement protocol. The averaging of 256 to 1,024 responses results in a well-formed reproducible response—amplitude 0.5 to 2 μV in male subjects and 0.2 to 1 μV in female subjects. The latencies of onset are similar to those obtained when the posterior tibial nerve at the ankle is stimulated—up to 45 ms.

These electrophysiologic techniques permit a precise assessment of the sensory and motor nerves of the sacral reflex arc and examination of the sacral nerve roots, cauda equina, conus medullaris, and the central nervous systems from sacral cord to sensory cortex. An accurate diagnosis is prerequisite to applying specific rehabilitative methods to treat bladder, bowel, and sexual dysfunctions.

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Robotics for Rehabilitation

COMPUTER-BASED, voice-controlled robots can enhance the quality of life for a person with high-level quadriplegia, particularly with an injury above the level of C-5 to C-6. Using robots can provide greater control over a person's physical environment, expand avocational and vocational horizons, reduce the expense of attendant care, and improve self-esteem.

Rehabilitation robotics began evolving in the early 1960s with Case Institute of Technology's (Cleveland) computerized orthoses. In the early 1970s, the University of Heidelberg developed an industrial manipulator and minicomputer through which a keyboard controlled by a telephone, typewriter, or a custom mouth-stick could be used for vocational purposes by handicapped persons. In 1981 the Johns Hopkins University's applied physics laboratory designed a more advanced robotic system permitting preprogrammed manipulation sequences for tasks such as retrieving books and serving food. The French Spartacus robotic aid made other contributions to the evolution of the field of robotics.

During the past eight years, the Stanford University and the Veterans Administration Rehabilitation Engineering and Research Center, in collaboration with the Spinal Cord Injury Center (all in Palo Alto, California), have explored through a number of projects the potential use of robots as assisting devices for severely disabled persons. A wide range of users successfully commanded a robot to perform preprogrammed self-care tasks such as providing drinking water, grooming the hair, brushing teeth, and cleaning the face. A third-generation desktop robotic assistant has already been developed and clinically evaluated for persons with high-level quadriplegia. Advances in speech-recognition technology and commercial computer hardware and software have significantly augmented the uses of the system PUMA-260 robot manipulator. Efforts are currently being directed to develop a desktop system that would be useful for a skilled computer scientist in an office setting. The most recent developments in progress include a controlled mobile manipulator consisting of a commercial robotic arm equipped with sensors and mounted on an omnidirectional vehicle, useful to a handicapped person confined to a bed or wheelchair.

Ordinarily no knowledge of computer programming is required to operate the robotic arm; the on-board microprocessor is preprogrammed by a therapist to perform complex tasks in response to one or two commands from the user.

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Prophylaxis and Control of Seizures in Brain-Injured Patients

POSTTRAUMATIC seizures are estimated to occur in approximately 5% of all patients with head injuries and anywhere from 20% to 60% of those with penetrating head injuries. The issue of seizure prophylaxis or treatment following a brain injury often arises in the early days after the injury. Treatment is often instituted with either intravenous phenytoin or phenobarbital in the neurosurgical unit, with conversion to the oral form when the patient is transferred to the rehabilitation service.

Investigators have recently been evaluating the cognitive effects of the use of phenytoin, phenobarbital, or carbamazepine on both persons newly diagnosed with epilepsy and those known to have epilepsy. These studies have important implications for the head-injured population because a disordered cognitive state already exists and further disruption may impede the rehabilitative effort. A comparative study showed little difference in the efficacy of these drugs in controlling tonic-clonic seizures.

In newly referred patients with epilepsy, the use of carbamazepine is associated with a better performance on memory tasks compared with that of phenytoin. Although no significant difference was found on mood ratings between the two drugs, higher blood concentrations of carbamazepine yielded lower ratings for anxiety, depression, and fatigue.

In epileptic patients whose regimen is changed from other anticonvulsants to carbamazepine, tests of memory and concentration show significant improvement. Improved cognitive functioning has also been shown when the number of drugs is reduced without an adverse effect on seizure control.

Although no anticonvulsant study has specifically examined cognitive effects on patients with brain injuries, based on the available data, it seems appropriate to recommend using carbamazepine as the first-line agent in this patient population. Phenytoin is an appropriate alternative if carbamazepine use is not tolerated. Phenobarbital is the least appropriate drug because of its sedative and cognitive effects.

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Advances in Surgical Reconstruction of Upper Extremities in Quadriplegia

THERE is increasing interest in and awareness of the role of surgical reconstruction for paralyzed upper limbs of patients with quadriplegia. A greater number of Veterans Administration and other public and private spinal cord injury centers are offering the possibility of surgical reconstruction to their quadriplegic patients, and an increasing number of patients are undergoing reconstruction in the hope of gaining more independence.

In the past decade novel operative techniques have been developed that extend the possibility of reconstruction to patients with more proximal cervical cord lesions. A useful international classification system has been developed that categorizes patients not on the spinal level of injury but by their remaining functioning upper extremity muscles. As spinal cord injury centers have gained experience with sufficient numbers of patients who have had such operations, ideas about the role and timing of upper extremity reconstruction in the overall rehabilitative process have taken form.

We recently reviewed our ten-year experience at two centers, the spinal cord injury services at the Palo Alto (California) Veterans Administration Medical Center and at Denver's Craig Rehabilitation Institute. During this period more than 400 patients with quadriplegia were examined and more than 170 patients underwent some type of surgical reconstruction for their upper extremity carried out in almost 250 operative procedures. For those patients whose only remaining function was active wrist extension, a one-stage key pinch between thumb and index finger was done (72 limbs). For those patients with a greater number of remaining functional forearm muscles (67 limbs), a two-stage procedure provided both active digital grasp and release and a strong thumb pinch. Active release was accomplished in the first stage and grasp and pinch provided in the second stage. In 40 limbs absent elbow extension was reconstructed by transferring either the deltoid to the triceps muscle or the biceps to the triceps muscle.

Our review has suggested the need to individualize reconstructive planning and to develop a standardized method to evaluate the benefits or deficits that result from upper limb reconstructive procedures. Surgical results are enhanced when specialists in spinal cord and rehabilitation medicine, as well as occupational and physical therapists, are involved in patient selection, the choice of surgical procedures, and aftercare and follow-up. The development and continued nurturing of a harmonious relationship with the specialists who are intimately involved in the total care of quadriplegic patients are vital.

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Sexuality Following Stroke

SEVERAL recent studies have reported significant reductions in sexual activity in both younger and older patients following a stroke. A pronounced reduction in libido has been found in both men and women, with a corresponding decrease in coital frequency. The pattern of sexual activity shows a major abrupt change following a stroke. Male patients reported that before a stroke, 95% had erections, 73% had normal ejaculation, and none thought that they had a sexual problem. A year after a stroke, however, only 38% reported normal erections, 22% ejaculated, and 58% thought that they had a sexual problem. Before a stroke, 43% of women reported normal orgasms and 7% felt that they had a sexual problem. At one year after a stroke, only 11% reported having orgasms and 48% felt that they had a sexual problem.

Sexual dysfunction following a stroke may have a number of causes. Impotence may be due to peripheral vascular disease, diabetic neuropathy, or the use of hypotensive medication or tranquilizers. Urologic studies, however, have shown that as much as 90% of all erectile dysfunction is psychogenic, and it is unlikely that these organic factors would be responsible for an abrupt change after a stroke. Further, sexual dysfunction is not due to the direct neurologic features of focal brain lesions, although there have been some case reports of intractable hypersexuality developing following temporal lobe lesions.

For many patients the important factors contributing to sexual dysfunction following stroke are based on behavioral changes. Physical disability and a sense of a loss of attractiveness lead to reduced self-esteem. Patients fear the rejection, or even abandonment, of their partner and are often reluctant to make emotional demands. They usually have some degree of reactive depression. Some patients report a fear that the physical stress of sexual activity may cause another stroke, such as through a rise in the blood pressure. That nature of a couple's relationship may change, with greater focus and attention being given to the details of physical care—transfers, bathing, and personal hygiene. Patients have the concern that these needs be met, and a caring, committed partner gains personal fulfillment through satisfying those physical needs. Involvement in these busy and time-consuming physical activities may be a partial sexual substitute, but they do not satisfy all of the needs of a couple for emotional expression and intimacy.

Physicians can be effective in helping patients and their spouses adjust to all of the consequences of disability from stroke, including sexual dysfunction. Physicians should understand sexuality and life-styles in the aged and learn how to relate empathically to disabled elderly persons. Intimacy may be expressed in different forms, especially in the elderly, but the need for friendship, sharing, and love continues. Physicians should be attentive to these important human needs and be prepared to initiate intervention early in rehabilitation to optimize the total adjustment process following a stroke.

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Ultralight Wheelchairs

WHEELCHAIRS are used for mobility, and users may spend hours every day in their chairs. The older wheelchairs are heavy (20 kg [45 lb]), cumbersome to maneuver, and aesthetically unappealing.

The demands by wheelchair athletes for lightweight, higher performance wheelchairs have produced dramatic changes in the manual wheelchair market. In 1979 a California manufacturer introduced the "sports chair." Today's sports chair weighs only 5 to 7 kg (12 to 15 lb) and is custom-made for competition and sports. Ultralight wheelchairs have advantages for all mobility-impaired patients: they are easier to maneuver, require less energy to do so, and are easier to transport.

Most manufacturers of lightweight wheelchairs now produce adjustable multi-option street chairs that weigh 10 to 14 kg (23 to 30 lb). The wheelchair frames are made from aluminum alloy, stainless steel, or both, with the basic models having rigid or folding frames. A rigid chair provides better performance and durability, but the folding chair becomes compact for transport.

Some typical options for lightweight wheelchairs include adjustable back height; adjustable axle positions, which increases stability; antitip devices; removable and adjustable-height armrests; and various frame and upholstery color choices. The built-in adjustability allows a person to set an optimal seat position to further maximize efficient propulsion.

The ultralight wheelchairs have a rapid wheel response and are easier to propel. These characteristics are important functionally to wheelchair users with impaired trunk, arm, and hand functions.

The cost of lightweight chairs is similar to their heavier counterparts, as the low-option, minimally adjustable chairs start at $700, and the high-option adjustable chairs cost as much as $2,100.

Other suggestions in the purchase of an ultralight wheelchair are professional input in chair and option selection for new wheelchair users and users switching from a traditional to an ultralight wheelchair; a trial use of new or similar equipment; and the careful selection of a competent, dependable wheelchair vendor.

Ultralight wheelchairs offer young, athletic, gravely or minimally disabled, or elderly persons an alternative to a cumbersome, heavy wheelchair.

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Perioperative Red Cell Transfusion

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Introduction

TRANSFUSION of red cells is a lifesaving measure in the management of a variety of medical and surgical conditions. The AIDS epidemic has raised the level of apprehension regarding the transmission of infectious disease by transfusion. This has stimulated a reexamination of the benefit-to-risk relationship for transfusion therapy. For many patients, homologous red cell transfusion carries great benefits, permitting surgical procedures that would not otherwise be possible, and allowing medical therapies for patients who are or may become anemic. Blood transfusions were once believed to be relatively safe, but recently many physicians, and patients have come to regard them as potentially dangerous. As with all potent and effective therapies, homologous blood transfusion carries risks along with benefits.

About two thirds of all red cell transfusions are given in the perioperative period. Newer knowledge of physiology and of the effects of anemia during and after surgery permits reevaluation of the indications for red cell transfusion in the perioperative period. Translation of this new information into clinical practice is appropriate. Autologous transfusion is increasingly used as an alternative to homologous red cell transfusions, especially in the perioperative period. There are other strategies that need to be considered.

To assess these issues, the National Heart, Lung, and Blood Institute, the Office of Medical Applications of Research, the Warren Grant Magnuson Clinical Center of the National Institutes of Health (NIH), and the Food and Drug Administration (FDA) convened the Consensus Development Conference on Perioperative Red Cell Transfusion on 27-29 June 1988. After a day and a half of presentations by experts in the field, a consensus panel drawn from the medical professions, blood banking organizations, and the general public considered the evidence. The focus of the presentations and of the panel was on adults and older children. Red cell transfusion in the neonatal period and early childhood were not addressed by this conference. The panel responded to the following questions:

- What should the criteria be for perioperative red blood cell transfusion?
- What is the morbidity of anemia in the perioperative period?
- What are the risks of red cell transfusion—both immediate and long term?
- What are the alternatives to red cell transfusion?
- What are the directions for future research?

1. What should the criteria be for perioperative red blood cell transfusion?

Modern surgical and anesthetic practice has been guided by the belief that a hemoglobin value of less than 10 g/dL or a hematrocrit value of less than 30% indicates a need for perioperative red cell transfusion. This guideline is widely applied in surgical patients, except in those with chronic renal failure, although firm evidence to support the practice is difficult to identify. This guideline had been based on calculations that suggested that oxygen availability to tissues and organs might be impaired when the hemoglobin value decreased to less than 10g/dL. However, these calculations rarely included appropriate corrections for cardiac output, oxygen extraction, or alterations in the hemoglobin affinity for oxygen.

The guideline was first challenged in the early 1960s, as surgical and anesthetic experience accumulated with patients who had severe anemia complicating chronic renal failure and other conditions. Subsequently, clinical experience suggested that those with severe anemia could tolerate anesthesia and surgery without evidence of major morbidity or mortality resulting from the anemia.

Evidence that hemoglobin values of less than 10 g/dL are tolerated during surgery is provided both by clinical and physiologic studies. Reports of several series of patients who refuse blood transfusions demonstrate that a variety of major operations are tolerated without apparent major morbidity or mortality. The available evidence does not support the necessity for the "10/30" rule. However, the literature is remarkable for the absence of carefully controlled, randomized trials that would

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permit definitive conclusions regarding perioperative transfusion practice. Other data suggest that cardiac output does not increase dramatically in healthy humans until the hemoglobin value decreases to approximately 7 g/dL. Anesthetized, paralyzed, and ventilated animals may survive acute isovolemic anemia until the hematocrit decreases to approximately 5%. However, significant functional deterioration occurs well before that point.

The decision to transfuse a specific patient should take into consideration the duration of anemia, the intravascular volume, the extent of the operation, the probability for massive blood loss, and the presence of coexisting conditions such as impaired pulmonary function, inadequate cardiac output, myocardial ischemia, or cerebrovascular or peripheral circulatory disease. These factors are representative of the universe of considerations that comprise clinical judgment.

No single measure can replace good clinical judgement as the basis for decisions regarding perioperative transfusion. However, current experience would suggest that otherwise healthy patients with hemoglobin values of 10 g/dL or greater rarely require perioperative transfusion, whereas those with acute anemia with resulting hemoglobin values of less than 7 g/dL will frequently require red cell transfusions. It appears that some patients with chronic anemia such as those with chronic renal failure tolerate hemoglobin values of less than 7 g/dL. The decision to transfuse red cells will depend on clinical assessment aided by laboratory data such as arterial oxygenation, mixed venous oxygen tension, cardiac output, the oxygen extraction ratio, and blood volume, when indicated.

It is essential to recognize that the combination of hypovolemia and anemia may lead to severe morbidity, and/or mortality, and that there is a minimum hemoglobin value for each individual below which severe morbidity, and/or mortality due to inadequate oxygen delivery is likely to occur.

2. What is the morbidity of anemia in the perioperative period?

Any adverse effect that occurs immediately preceding, during, or after the operations is considered to be perioperative morbidity. Morbid events include wound infection, delayed wound healing, bleeding, and impaired recovery. Many physicians and patients are concerned that anemia may increase perioperative morbidity.

In adults, anemia is usually considered as hemoglobin <11.5 g/dL or hematocrit <36 in females and hemoglobin <12.5 g/dL or hematrocrit <40 percent in males. Anemia may be mild or severe, acute or chronic. One of the first things to consider in determining whether the underlying process will adversely affect the perioperative course is the cause of anemia. Significant disease may be a determinant of morbidity. Mild anemia itself is not associated with perioperative morbidity. The principal concern is whether more severe anemia is related to morbid events. It is important to separate the effects of of hypovolemia, and decreased perfusion from the effects of anemia. If there is normal intravascular volume and normal tissue perfusion, there is no adverse effect on cardiovascular function until anemia is profound.

Healing of a surgical wound depends on angiogenesis, collagen deposition, and epithelialization. Oxygen tension and adequate perfusion are critically important for wound healing. However, healing is not compromised by normovolemic anemia unless it is extreme. Animal experiments suggest that wound healing is impaired below a hematocrit of 15%. There is no support for transfusion to a certain level of hematocrit or hemoglobin to promote wound healing. Likewise, there is no clear evidence that anemia increases the frequency or severity of postoperative infections. There are also no data to suggest that transfusion of red cells has a salutory effect on infection.

In patients with renal failure, associated metabolic abnormalities, and anemia, there may be a prolonged bleeding time that appears to be corrected by increasing the hematocrit. Some animal experiments also suggest that decreased hematocrit is associated with prolonged bleeding time. However, in nonuremic humans, no relationship has been demonstrated between anemia and an increased bleeding time. Moreover, there is no clinical evidence that anemic patients have increased bleeding during or following surgery.

Phlebotomy has been demonstrated to decrease exercise tolerance in healthy people; however, there are no controlled studies of the relationship of anemia to delayed recuperation or increased hospital stay.

3. What are the risks of red cell transfusion—both immediate and long term?

In deciding whether to use red cell transfusion in the perioperative period, the need for possibly improved oxygenation must be weighed against the risks of adverse consequences, both short term and long term. The disadvantages are of two general types: transmission of infection and adverse effects attributable to immune mechanisms.

Any infectious agent that is present in the blood of a donor at the time is potentially transmissible to a susceptible recipient. The consequence may be seen as clinical morbidity and mortality after an incubation period characteristic of the agent or recognized only by serologic or other types of laboratory testing. If the agent produces chronic infection, clinical morbidity and mortality may not be seen until years after the transfusion.

In modern blood banking practice, bacterial contamination of red cell units is rare. For practical purposes, the transmissible agents of greatest concern are viruses.

- Human hepatitis viruses are the most frequently transmitted infectious agents. The incidence of non-A, non-B infection after recent changes in criteria for donor acceptance and the introduction of nonspecific laboratory tests (antibody to hepatitis B core antigen and alanine aminotransferase) is not precisely known, but it may be 1:100 or less per unit. Hepatitis B virus infection, for which a specific screening procedure has been in use since 1971, still occurs, and prior to recent changes in donor populations was in the range of 1:200 or 1:300 per unit.

- Human immunodeficiency virus(es), about which there is the greatest public concern, presently pose only a remote hazard because of donor selection and laboratory screening procedures. It is variously estimated that the risk of HIV transmission by transfusion is 1:40,000 to 1:1,000,000. That level of risk is unlikely to be appreciably decreased in the foreseeable future even if additional screening tests are added. The consequences of HIV infection are rarely seen until two or many more years have elapsed, but ultimately morbidity and mortality are extremely high.
- Cytomegalovirus infection occurs with moderate frequency among those recipients without prior infection. Most of these infections are asymptomatic except among immunocompromised people.
- Human T-cell lymphotropic viruses (HTLV-I/II) occur with low but not negligible frequency among donor populations in the United States. It is not known whether transfusion-transmitted infection with these viruses among adults results in T-cell leukemia/ lymphoma, and/or neurologic disease several to many years later.
- On rare occasions, other microbial agents, including parvoviruses, plasmodia, Epstein-Barr virus, and babesia, cause infection and disease.

It is known for the human hepatitis viruses that the incidence of infection in recipients increases with the number of donor exposures. This relationship is probably true for other transfusion-transmitted infections. If homologous transfusion is to be used, therefore, the number of units administered should be kept to a minimum.

Immunologic consequences also complicate homologous red cell transfusion. Hemolytic and nonhemolytic reactions are largely caused by alloimmunization to red cell and leukocyte antigens. Compatibility testing has virtually eliminated immediate hemolytic transfusion reactions; when they occur, they are largely due to human error. Nonhemolytic febrile reactions occur in 1% to 2% of recipients due to sensitization to leukocyte antigens. This may be minimized by the use of leukocyte-poor blood products.

INCIDENCE OF TRANSFUSION REACTIONS PER UNIT

Fever, chills, urticaria	1:100
Hemolytic transfusion reactions	1:6,000
Fatal hemolytic transfusion reaction	1:100,000

Components of red cell transfusions, possibly leukocytes, may induce immunosuppression. The clinical significance of the phenomenon is unclear and is presently under investigation in a number of areas.

4. What are the alternatives to red cell transfusion?

Although homologous red cell transfusion is becoming continuously safer and is a major therapy, it should not be considered a substitute for good surgical and anesthetic technique. Progress in anesthesia has allowed more time for the surgeon to be fastidious about hemostasis, and new surgical techniques have improved the surgeon's ability to control bleeding.

A variety of alternatives to homologous transfusions exist. The available literature does not permit a definitive recommendation concerning the cost/benefit or the risk/benefit ratio of any of them. In most cases, the expected blood loss of the surgical procedure can be predicted from clinical evaluation. This prediction should be used in the selection of a strategy to minimize the use of homologous red cells.

- Autologous transfusion programs eliminate the viral transmission and immunologic risks previously discussed. The practice appears useful for selected patients and is most valuable when major blood loss is anticipated. However, the risks of the procedure have not been fully evaluated. There are a number of complicated issues that deserve further investigation. These include the logistics of the process and concerns about unnecessary transfusions, errors in distribution, testing, and the disposition of unused units. Current experience with autologous transfusion is limited to about 2% of transfusions in the United States.
- Intraoperative blood salvage appears to be safe in some applications and reduces the requirement for homologous transfusion. Although current technology is costly because of disposable supplies, equipment, and personnel, it may eliminate the need for homologous blood in some patients.
- Selection of patients for intraoperative isovolemic hemodilution is based upon still-emerging criteria. Appropriate limits have not yet been established for its general use. Many of the criteria applicable to the use of autologous transfusion are comparable to those for use of intraoperative hemodilution. Some patients can be treated in this way and may avoid homologous transfusion.
- Maintenance of perfusion is still the primary problem in dealing with blood loss. There are a number of cost-effective substitutes for treatment of reduced plasma volume and total blood volume. By contrast, there is at present no suitable available material to support oxygen transport. Modified hemoglobin solutions and improved perfluorochemical emulsions are under development but may serve only limited clinical purposes. Thus, no recommendation can be made for use of any such material.
- Pharmacologic approaches to reducing surgical blood loss are promising. Hemostasis may be improved with the use of desmopressin. Intraoperative deliberately induced hypotension may also reduce surgical blood loss in some procedures.
- Recombinant erythropoietin (r-HuEPO) may be useful in avoiding homologous transfusion by increasing the amount of blood available in programs of autologous transfusion. Studies in uremic patients as well as animal experiments suggest that some anemic patients

can have useful increase in hemoglobin levels by treatment with r-HuEPO preoperatively or postoperatively, which would reduce their transfusion requirements. This approach also should be developed further.

- The risks and benefits of directed donations. Existing data in this area are inconclusive.

5. What are the directions for future research?

Future research should adhere to appropriate standards of research design, including adequate sample sizes, controls, multicenter sites, and randomization, where feasible. The panel identified the following research areas worthy of emphasis:

- The effect of anemia on rate of recovery and length of hospital stay.
- The determination of the risk of transfusion-transmitted infection with contemporary donor screening procedures and evaluation of new measures to identify infected donors.
- The determination of immune changes induced by transfusions and their clinical consequences, if any.
- The identification of organs that are specifically at risk during acute anemia and the development of clinical monitors that measure directly or indirectly the state of perfusion and the presence of cellular hypoxia in those organs that are specifically sensitive to low hemoglobin values.
- The development of predictors that better define the need for perioperative transfusion.
- The development of appropriate blood substitutes.
- The performance of prospective controlled trials to evaluate the effects of increasing the hematocrit in anemic patients in the perioperative period.
- The evaluation and improvement of the safety and efficacy of autologous transfusion and intraoperative blood salvage procedures and the definition of criteria for selection of patients.
- The development of measures for the improvement of the safety of homologous blood transfusions.

Conclusions

- Available evidence does not support the use of a single criterion for transfusion such as a hemoglobin concentration of <10 g/dL. No single measure can replace good clinical judgment as the basis for decision-making regarding perioperative transfusion.
- There is no evidence that mild-to-moderate anemia contributes to perioperative morbidity.
- Perioperative transfusion of homologous red cells carries documented risks of infection and immune changes. Therefore, the number of homologous transfusions should be kept to a minimum.
- There are being developed a variety of promising alternatives to homologous transfusion. These alternatives will reduce the use of homologous transfusion to some extent and their development should be encouraged. However, in the foreseeable future, homologous blood will continue to be the therapeutic mainstay. Therefore, primary attention should be devoted to the promotion of safe and effective transfusions from carefully selected volunteer donors.
- Future research is necessary to define the best indications for red cell transfusion and the safest methods of blood conservation and delivery.

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The "Competition Revolution" in Health Care

VICTOR R. FUCHS

Any attempt to assess the effects of a revolution that is less than a decade old and still in progress is fraught with danger. The relevant data appear only with a lag and are subject to revision. Some of the most important effects necessarily occur slowly, and at this point any evaluation of recent changes in health care must contain large elements of forecast as well as measurement after the fact. My assignment poses an additional problem because the health care revolution has been widely advertised as one of "increasing competition." Is this characterization correct? To what extent have recent changes in organization and finance increased competition among health care providers? To answer these questions we first must consider what economists mean by competition and appraise the factors that limit competition in health care. The major portion of this article deals with the effects of the revolution regardless of whether related to competition or not. We will see that the cost-containment efforts of the 1980s did not result in a slowing of expenditures for health care. The reasons for this apparent failure and the implications for the future are discussed.

Health Care Competition In Context

Health care is, in many respects, similar to other goods and services. It is produced with resources that are scarce relative to human wants. Thus every society must have control mechanisms for determining how much health care to produce, how to produce it, and how to distribute it among the population. In principle, only three types of mechanisms are available: the market, central direction, and traditional norms. Kenneth Boulding has characterized these alternatives as the exchange system, the threat system, and the integrative system.[1] All modern societies use a combination of the three, but the proportions vary greatly from country to country and from time to time within the same country.

For the market approach to succeed, competition must be present. Without competition, sellers with monopoly power or buyers with monopsony power can take advantage of their customers or their suppliers with results that are neither efficient nor equitable. Most health care markets depart substantially from competitive conditions, sometimes inevitably and sometimes as a result of deliberate public or private policy.[2] One question of interest is the extent to which the changes in finance and reimbursement of recent years have moved health care markets toward a more competitive structure. Another, to be discussed at the end of the article, is whether the competitive market approach is the goal toward which health policy should strive.

The term competition has a long and complex history in economics. To Adam Smith it was a powerful, beneficent instrument of change that would liberate the economy from the deadening influence of mercantilist restrictions. With extraordinary vision, he saw that if the anticompetitive influence of government were eliminated, the market system literally could create the "wealth of nations." He also warned against private attempts to limit competition, especially the propensity of people of the same trade to meet together "even for merriment and diversion, but the conversation ends in a conspiracy against the public."[3]

Following the prescriptions of Smith, Ricardo, and other classical economists, nineteenth-century England developed the competitive market approach in full force, and the British economy prospered. Many noneconomists, however, railed against the evils of competition, and the term began to acquire an odious connotation.[4]

In modern times, economic theorists have defined competition (and its many variants) with greater precision. *Perfect* competition means that the individual seller or buyer is so small relative to the total market that the actions of that seller or buyer have no effect on the market price.[5] Each producer's output is indistinguishable from competitors', and there is perfect information on both sides of the market. Given certain assumptions about preferences, income distribution, and economies of scale, perfect competition constitutes an ideal in the sense that if it prevailed in every market, resources would be allocated in a socially optimal way.

A more practical approach to the question of competition emphasizes the following conditions: (1) A large number of buyers and sellers, no one of whom is so big as to have a significant influence on the market price; (2) no collusion among the buyers or sellers to fix prices or quantities; (3) relatively free and easy entry into the market by new buyers or sellers; (4) no governmentally imposed restraints on prices or quantities; and (5) rea-

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sonably good information about price and quality known to buyers and sellers.

In short, the structure of the market (number of firms and their size distribution), barriers to entry, and privately initiated or government-sanctioned collusion generally determine the extent of competition. In health care markets there is another consideration: Are the buyers of health care sensitive to costs? If they are not, the question of competition among suppliers is less relevant. One consequence of competition, in health care as well as other markets, is a reduction in profits.

Let us look at each sector of the health care industry and ask whether recent changes have moved the sector in a more competitive direction. Health insurance has always been competitive, with hundreds of firms seeking business in most large markets. Nationally, over 1,200 firms sell health insurance, and the number has not changed materially in the 1980s. In some markets, Blue Cross and Blue Shield (the "Blues") have a dominant share, and they have been accused of competing "unfairly" by getting discounts from hospitals. Health insurance company profits are not known precisely and fluctuate markedly from year to year. The conventional wisdom is that they were low in the early 1980s, rose sharply in 1984 and 1985, and have been falling since then. Much of the recent pressure on profits comes from insurance company ventures in health maintenance organizations (HMOs) and preferred provider organizations (PPOs).

The number of hospitals certainly has not increased in the 1980s; indeed, it has decreased slightly, and this decrease has been widely applauded. Many hospitals have no close competitors because they are located in areas with small populations. Hospitals located close to one another have always competed, but in the past the target was usually physicians, and the bait was better equipment, bigger support staff, and the like. Now the target is more likely to be patients, who are wooed with amenities and services on the one hand, or with price discounts (to large buyers) on the other. If the total amount of competition among hospitals increased in the 1980s, profits should have fallen; however, there is no evidence of that through 1985. In that year profits from the prospective payment system (PPS) were estimated at $5.1 billion or a profit/revenue rate of 15.3 percent.[6] In 1986, however, profits probably did fall as the large buyers of care, both public and private, began to press harder on price and utilization.

The number of physicians has increased in the 1980s, but the rate of increase has been no more rapid than in the 1970s, when competition was rarely mentioned. Moreover, during the 1980s, there has been an effort to get medical schools to reduce enrollment or to close altogether, and the number of independent physicians has declined as a result of a trend toward larger groups and organized practices.

There has been a large increase in the number of organized health plans and a big increase in competition in that sector. Thus, an organization such as Kaiser Permanente, which frequently was the only plan in an area, undoubtedly has perceived a big increase in competition. At one time Kaiser was the only organization offering managed care in many markets, and their low costs relative to conventional insurance plans insulated them from competitive pressures. All that has changed. Furthermore, the increased emphasis on self-insurance by large firms and on experience rating by health insurers threatens the survival of Kaiser's community-rating approach.

With respect to collusion, there probably has been some reduction through the elimination of laws that prohibited selective contracting. Price discounting is more widespread now than in the past, although until we have information on utilization and quality of care we will not know whether discounts truly lower the cost of care. It is ironic that selective price discounting by hospitals and physicians now is hailed as evidence of competition, when one of the most frequently cited articles in health economics, Reuben Kessel's "Price Discrimination in Medicine," concluded that the existence of sliding fees proved that physicians had monopoly power.[7]

Most of the barriers to entry into health care markets—licensure, accreditation, and certification—are about the same today as in 1980. The growth of for-profit firms, however, with their access to equity capital, may have encouraged entry in some areas. There certainly has not been any reduction in governmentally imposed prices; at the state level, especially, the trend has been toward more government intervention.

Finally, with respect to information available to buyers, there has been a small increase in the form of health plan evaluations and some primitive quality-of-care measures for hospitals. Yet, the fundamental problem remains: patients frequently have great difficulty determining how much and what kind of medical care they need, and they probably always will.

In short, except for the growth of organized health plans, I would not characterize the 1980s as a period of substantial increases in health care competition. I say this even though most physicians, hospital administrators, and other health professionals feel that they are under increased pressure, which they attribute to competition. Most of this pressure, however, really comes from another source, namely, more activist policies by the buyers of health care. The large buyers have decided to exert "countervailing power" against the sellers.[8] This may be socially desirable, but it is not the same as competition. However, a shift away from open-ended, cost-unconscious third-party reimbursement is resulting in more emphasis on price as opposed to nonprice competition. Also, a shift from inpatient to ambulatory care has forced many hospitals to seek new sources of revenue.

What Really Happened?

In the three decades preceding 1980, demand for health care increased enormously, beginning with rapid diffusion of private health insurance. The number of persons with hospital insurance jumped from 32 million at the end of World War II to 122 million by 1960, and coverage for physicians' services soared from fewer than 5 million to over 83 million. Then, when the spread of private insurance ran out of steam, tens of millions of additional Americans obtained health insurance coverage through the Medicare and Medicaid legislation of 1965.

Changes on the demand side were accompanied by substantial shifts in supply. Between 1950 and 1980, the number of short-term hospital beds per 1,000 population rose from 3.3 to 4.4, hospital personnel per patient soared from 1.8 to 3.8, and physicians per 1,000 population jumped from 1.5 to 2.1. Generous funding from the National Institutes of Health (NIH), as well as heavy investment by drug companies and other private firms, contributed to a scientific and technologic transformation of medical practice.

For three decades, "highest-quality care for all" dominated the health policy agenda. Not surprisingly, spending for health care jumped from 4.6 percent to 9.1 percent of the gross national product (GNP). As 1980 approached, however, concern shifted from increasing access and raising quality to curbing the skyrocketing cost of health care.

In assessing the possible mechanisms to achieve cost containment, policymakers rule out self-regulation by physicians and hospitals as ineffective. A so-called voluntary approach had been tried in the 1970s and been found wanting. Direct regulation by the federal government, as implied in the Carter-Califano proposals, also was rejected as inconsistent with the political-economic temper of the times. With air transportation, trucking, banking, and other industries being thrown open to the rigors of the unregulated marketplace, there was little support in Washington for close regulation of health care. A few states, however, did adopt a regulatory approach through hospital commissions charged with setting rates and controlling utilization.

Prospective Payment

Probably the most important change in the 1980s was the introduction by the federal government of a prospective payment system (PPS) for Medicare beneficiaries, based on diagnosis-related groups (DRGs). Although this change has helped to slow the rate of growth of hospital expenditures, it has little to do with competition. To see this, imagine that all hospitals were owned by one giant corporation, HMA (Hospital Monopoly of America). The switch from a system of cost reimbursement to a prospectively set fixed fee could result in a slowing of expenditures and put great pressure on HMA even though its monopoly position was unchanged.

The impact of PPS on hospital length-of-stay has been substantial.[9] Hospitals reimbursed under PPS had much smaller increases in costs per case than those still covered by the previous Tax Equity and Fiscal Responsibility Act (TEFRA) system (+7.6 percent versus +18.1 percent between 1982 and 1984). The most important factor was a more rapid decline in average length-of-stay in the hospitals paid by PPS (-14.6 percent versus -7.9 percent).

The role of competition in this decline is unclear. A recent study of California hospitals by Melnick and Zwanziger concluded that those located in highly competitive markets were more responsive to cost containment in 1983-1985 than were hospitals in areas with very little competition.[10] In 1983, however, the hospitals in the highly competitive markets had almost 50 percent higher expenses per admission, so it is not surprising that they would be affected more by PPS and similar cost-containment efforts. In a national study, Robinson and Luft reported that costs actually are higher in hospitals located in competitive markets than in hospitals that have no close competitors (controlling for wage rates, patient case-mix, state regulatory programs, and teaching status of hospitals).[11] In the past, competition between hospitals typically took cost-increasing, nonprice forms such as meeting physicians' requests for new technologies. Currently, there probably is more emphasis on price competition, but extensive expenditures for advertising, community relations, and outreach programs show that nonprice competition is still significant. The new price competition is focused more on patients and less on physicians.

Another aspect of cost containment in the 1980s is a reversal of the egalitarian ethos of the 1960s and 1970s. In recent years, we have seen reductions in health care programs for the poor, elimination of cross-subsidies by tying premiums more closely to experience, and attempts to reduce utilization via deductibles and copayment. Regardless of whether these changes are good or bad, they should not be mistaken for changes in competition among suppliers.

Consider the RAND health insurance experiment, which conclusively demonstrated that the "general law of demand" applies to medical care as well as to wheat and widgets.[12] In a prospective, carefully controlled study, families with full insurance coverage used more care than those with cost sharing. Although this result is often cited in support of the competition argument, no such interference is warranted. Both the free-care families and the cost-sharing families received their care in the same markets, and the cost-sharing effect on utilization was as large in a site that had fewer than two dozen physicians as in a site that had several thousand.

From a theoretical perspective, it is not clear that more competition would enhance the cost-saving effects of deductibles and coinsurance. Given the inevitability of imperfect information, rival health plans faced with decreasing demand might increase marketing expenditures more than a monopoly would. At least some of these expenditures would be a dead-weight loss from the point of view of consumer welfare.

How effective was cost containment?

The question of competition aside, did cost containment reduce the rate of growth of health care expenditures? The answer is that it did not, at least so far. As shown in Exhibit 1, the overall growth of real expenditures per capita was more rapid after 1980 than in the previous decade.[13] Disaggregation reveals that expenditures for hospital care did slow appreciably after 1983, but expenditures for physicians' services accelerated rapidly throughout the 1980s. Indeed, spending for physicians grew at a faster rate from 1980 to 1986 than in the euphoric period following the introduction of Medicare and Medicaid in the late 1960s. Spending for dental care, other professional services, drugs and sundries, other personal care, and "program administration and net cost of private insurance" also accelerated in the 1980s. The increase in the last item was so great that one may suspect some accounting artifact. The growth of nursing home expenditures slowed somewhat after 1980, and government public health expenditures also grew less rapidly. The latter change reflects government policy and bears no relation to market structure.

Exhibit 1
Rates Of Change Of National Health Expenditures And Components, Adjusted For Population Growth And Inflation, Selected Periods, 1965-1986, Percent Per Year[a]

	1965-70	1970-80	1980-86	1980-83	1983-86
National health expenditures	6.2%	3.8%	4.4%	4.8%	4.1%
Health services and supplies	6.5	4.0	4.6	5.0	4.3
Personal health care	6.6	3.9	4.4	4.6	4.1
Hospital care	8.4	4.7	3.7	4.9	2.5
Physicians' services	5.0	3.7	5.5	5.3	5.6
Dentists' services	4.9	3.7	5.1	4.1	6.1
Other professional services	4.0	4.5	9.3	9.0	9.6
Drugs and medical sundries	3.2	0.4	2.3	1.5	3.2
Eyeglasses and appliances	3.8	1.7	2.1	-0.9	5.1
Nursing home care	10.7	6.5	4.6	4.8	4.4
Other personal health care	7.5	2.2	5.9	4.0	7.8
Program administration and net cost of private health insurance	4.6	3.7	10.5	13.3	7.8
Government public health activities	5.8	8.3	4.3	2.8	5.8
Research and construction of medical facilities	3.2	-0.3	-0.6	1.2	-2.4
Noncommercial research	0.3	1.8	1.2	-2.8	5.1
Construction	5.2	-1.7	-2.3	4.2	-8.9

Source: *Health Care Financing Review* 8, no. 1 (1983 data) and no. 4 (1970, 1980, and 1986 data).

[a] Deflated by the implicit gross national product (GNP) deflator.

Failure To Decrease Spending

To gain insights regarding the failure of the health care revolution to slow spending in the 1980s, it is useful to begin with a cost containment identity:

$$\text{Expenditures} \equiv \left[\begin{array}{l}\text{quantity of inputs per}\\ \text{unit of service}\end{array}\right] \left[\begin{array}{l}\text{prices of}\\ \text{inputs}\end{array}\right] \left[\begin{array}{l}\text{quantity of}\\ \text{services}\end{array}\right]$$

By definition, expenditures depend upon the reciprocal of productivity (the first term) multiplied by the prices of the factors of production (including profits) multiplied by the quantity of services (including quality as one dimension of quantity). For cost containment to have had an effect, it would have had to have worked through one or more of these three terms.

Productivity. The first term, the reciprocal of productivity, is extremely difficult to measure, but in my judgment there was not much improvement. Moreover, the potential for change is not large. This term measures *production efficiency* in the narrow sense of the quantity of services delivered to patients, regardless of the value of those services. It does not purport to measure efficiency in the broad sense of changes in health outcomes or other aspects of patient satisfaction. Unfortunately, a good deal of the discussion of cost containment has blurred the distinction between these two concepts of efficiency. The elimination of "unneccessary care," or care with low value relative to costs (efficiency-enhancing in the broad sense), is possible and desirable but has little to do with making hospitals and physicians' offices run more efficiently in the narrow sense.

In my view, there is only limited potential for increasing the quantity of services produced with a given quantity of resources or for producing the existing quantity of services with fewer resources. No doubt every organization runs with some slack, and most individuals could work harder than they do. However, the notion that there is large potential for cost containment through increases in production efficiency is misguided. To put the matter in simplest terms, how much additional nursing services can be obtained from a fixed number of nurses? In the short run, nurses probably can be pressed to work harder, but, in the long run, they will quit or demand higher pay for the harder work. One obvious way to increase productive efficiency would be to reduce the number of physicians in specialties with large excess capacity, but such reductions will come slowly, if at all.

The limited measures of productivity that are readily available, such as the number of hospital personnel per patient or number of physicians per 1,000 patient visits, show no improvement since 1980, and perhaps a deterioration. To be sure, the quantity of services per patient day and per visit probably increased, but we do not know by how much. We do know that after 1980 there was a considerable increase in resources going into marketing, advertising, new computer systems, management consulting, and the like. Whether these additional inputs resulted in an equivalent increase in services to patients is unclear. Also unclear is whether the additional inputs required by hospitals and physicians to adapt to the changes in health care finance are "one-time" or whether they will continue. For the period 1980-1986, I would not be surprised if subsequent research shows that the productivity term made a negative contribution to cost containment.

Input prices. The second term on the right-hand side of the cost-containment identity refers to the prices of inputs (of given quality), including inputs of capital and entrepreneurial skill. Thus this term includes profit as a price. The most important input to health care is labor, and fortunately we have good data on wages in health and other industries. These data show that hourly earnings of health care workers grew faster than the earnings of other American workers between 1979 and 1985 (Exhibit 2).[14]

The gap of over one percentage point per year cannot be explained by differences in employment growth. It is true that employment grew much more rapidly in health than in the goods sector (mining, manufacturing, and the like), but employment in other services (banking, finance, retail trade, personal services, education, and so on) grew almost as rapidly as in health.

A more promising explanation is that health workers are disproportionately female, and women's earnings rose more rapidly than men's in the 1980s.[15] Women constitute 74 percent of employment in health, but only 49 percent in the rest of the service sector and 26 percent in the goods sector. Given the differential change between women's and men's earnings of about one percentage point per year, the differences in gender proportions could produce a differential between health and the rest of the service sector of about 0.25 percentage point per year and between health and the goods sector of about 0.50 percentage point. But even if one looks only at women's wages, those of health workers grew more rapidly. In the most thoroughly controlled comparisons, looking only at white women ages twenty-five to thirty-four and thirty-five to forty-four at three specific levels of education, the rate of growth of earnings in health was slightly greater than the rate in the rest of the service sector (Exhibit 3).[16] Whatever else cost containment did, it did not noticeably depress the price of labor—the most important input. This is not surprising. The health industry must offer competitive wages if it is to be able to attract the quantity and quality of labor it needs.

Exhibit 2
Rate Of Change Of Hourly Earnings In Health Relative To Other Sectors, 1979–1985, Percent Per Year

	Health relative to service sector (excluding health)		Health relative to goods sector	
	Unadjusted	Adjusted[a]	Unadjusted	Adjusted[a]
All	1.4%	1.3%	1.1%	1.3%
White women	1.4	1.2	0.4	0.4
Black women	0.5	0.7	-1.6	-0.6
White men	0.3	0.5	-0.1	0.4
Black men	3.4	3.0	2.1	1.9

Source: *Current Population Survey Tapes*, March 1980 and March 1986; calculations by author.
[a] Multiple regression analysis is used to control for changes between 1979 and 1985 in the sex, race, age, and education distributions of workers in each sector.

Quantity of services. If changes in productivity and input prices did not (and in my opinion cannot) contribute much to a slowing of health care expenditures, that leaves the third term, quantity of services, as the only significant mechanism through which costs can be contained. Sooner or later the only way to cut health care spending significantly is to reduce the quantity of services delivered to patients.

Exhibit 4 suggests that recent cost-containment efforts did have a major impact on the quantity of hospital care delivered to Medicare beneficiaries. The number of bills (a good index of number of admissions) declined in the 1980s instead of rising rapidly as in the late 1970s; average length-of stay decreased more dramatically than before; and the number of days of care stopped rising and then fell rapidly.[17] If the average rate of decline of 5.5 percent per year were to continue for eight more years, the number of days of care would fall to one-half the 1980 level! Total charges (deflated) continued to rise, but at a much lower rate than before 1980. The rate of increase in charges per bill was relatively unchanged, but reimbursement per bill rose 1 percent per year faster after 1980, contributing to better profit rates for hospitals under PPS.

Exhibit 3
Hourly Earnings Of White Women In Health Sector And Service Sector (Excluding Health)

	Average hourly earnings, 1985		Average rate of growth of real hourly earnings, 1979 to 1985 (percent per year)[a]	
	Health	Service sector (excl. health)	Health	Service sector (excl. health)
Ages 25–34				
Years of education				
12	$ 6.66	$6.33	0.1%	-0.2%
13–15	8.55	7.55	-0.1	0.5
16	10.36	8.90	1.2	0.4
Ages 35–44				
Years of education				
12	$ 7.03	$6.59	0.0%	-0.1%
13–15	8.97	8.27	1.4	1.0
16	11.28	9.66	1.3	1.0
Simple averages				
Two age groups				
Years of education				
12	$ 6.84	$6.46	0.0%	-0.1%
13–15	8.76	7.91	0.7	0.8
16	10.82	9.28	1.1	0.7
Three education groups				
Ages 25–34	$ 8.52	$7.59	0.3%	0.3%
Ages 35–44	9.10	8.17	1.0	0.7
Six age-education groups	$ 8.81	$7.88	0.7%	0.5%

Source: *Current Population Survey Tapes*, March 1980 and March 1986; calculations by author.
[a] Deflated by the Consumer Price Index.

With respect to the population under age sixty-five, the growth of participation in HMOs from 5 percent to 12 percent of the population (1980-1986) also must have had an appreciable effect on hospital use. HMO members typically use only about two-thirds as much hospital care as the rest of the population; thus the shift in proportions would explain a decrease in hospitalization of 1.4 percent per year even if everything else remained constant.

It seems clear that the cost-containment efforts did have an impact on hospital services, not only for the Medicare population but for patients under sixty-five as well. For the total U.S. population, the 1985 discharge rate (short-term general hospitals) of 148 per 1,000 was the lowest since 1971, and represented a decline of over 10 percent since 1980. Virtually all of the decline occurred after 1983. Average length-of-stay was dropping prior to 1980, but the rate of decline accelerated after that date. Hospital expenditures did respond to the shift to HMOs, the changes in reimbursement methods, the closer scrutiny of hospital admissions and lengths-of-stay by third-party payers, and a slight increase in the proportion of hospital bills paid directly by patients, from 7.4 percent to 9.4 percent.

Exhibit 4
Rates Of Change Of Medicare Short-Stay Hospital Bills Approved For Payment, Percent Per Year

	1974–1980	1980–1985
Number of bills	5.1%	-1.9%
Average length-of-stay	-1.6	-3.5
Total days of care	3.4	-5.5
Total charges (deflated)	10.7	3.4
Charges per bill (deflated)	5.6	5.3
Reimbursement per bill (deflated)	4.3	5.3

Source: *Social Security Bulletin* (September 1987), p. 78, Table Q-13.

Cost containment has yet to make an impact on physicians' services. The number of bills for Medicare beneficiaries grew somewhat more slowly after 1980 than in the 1970s, but the growth rate for allowed charges continued at almost 8 percent per year, deflated (Exhibit 5). Reimbursement in relation to allowed charges was less favorable in 1980-1986 than in 1974-1980, especially for physicians providing medical as distinct from surgical care. This undoubtedly contributed to physicians' sense of unease.

Exhibit 5
Rates Of Change Of Medicare Physician Bills Paid, Percent Per Year

	Total		Medical		Surgical	
	1974–80	1980–86	1974–80	1980–86	1974–80	1980–86
Number of bills	12.9%	9.7%	13.5%	9.8%	9.2%	8.3%
Allowed charges (deflated)	8.7	7.6	9.2	7.0	8.1	8.6
Allowed charges per bill (deflated)	-4.2	-2.0	-4.3	-2.9	-1.1	0.3
Reimbursement per bill (deflated)	-3.3	-1.8	-3.2	-2.9	-0.6	0.8

Source: *Social Security Bulletin* (September 1987), p. 80, Table Q-15

For the population as a whole, there is uncertainty about the trend in number of visits to physicians. The National Health Interview Survey shows an increase from 4.8 to 5.1 per person between 1980 and 1983, but the access surveys sponsored by The Robert Wood Johnson Foundation show a decline from 4.8 to 4.3 ambulatory visits per person between 1982 and 1986.[18] At this point, the most reasonable conclusion is that number of visits probably did not change much one way or the other; the intensity of each visit probably increased. Some observers expected an increase in deductibles and coinsurance to slow spending for physicians' services, but now slowing is evident. One likely explanation is that the proportion of physicians' spending paid directly by patients did not increase between 1980 and 1986; it actually fell from 30 to 28 percent.

Other Explanations

The failure of cost-containment efforts in the 1980s to have much effect on expenditures does not come as much of a surpise to those who emphasize supply factors—hospitals, physicians, and technology—as major influences on costs. In 1980, a huge hospital capacity was already in place, and fewer patient days do not translate into equivalent reductions in costs until hospitals actually close. The data from Feder and colleagues indicate that costs per patient day (in current dollars) jumped 28.1 percent between 1982 and 1984 in the hospitals covered by TEFRA and almost as rapidly, 26.4 percent, in the hospitals reimbursed by PPS.[19] Hospital closure comes slowly, but the pace is increasing: eighty-three in 1986 compared with sixty-one in 1985 and an average of fifty-four per year in 1980-1984.[20]

Physician supply. A large physician supply also was in place in 1980, and continued to increase after that date. It takes at least a decade for changes in demand to affect the flow of new physicians into the market, and even longer for changes in the flow to have a significant effect on the size of the total stock and its distribution among specialties.

Fees for specialty care and the number of specialists have, as yet, been relatively untouched. Consider ophthalmological surgery, for example. My discussions with physicians in San Diego County led to the conclusion that there are at least four times as many ophthalmologists practicing there as are needed to meet the surgical needs of the community at current rates of utilization. Nevertheless fees remain high (and new medical school graduates continue to flood into ophthalmology). An ophthalmologist with a reasonably full workload—say ten cataract operations (or their equivalent) per week for forty weeks per year—would gross almost $1 million per year. Most of them, of course, do not make that much, but there is large excess capacity for surgery, for which the community pays a high cost. The failure of fees to fall to a level that would eliminate the excess capacity while still providing a fair return to physicians with reasonably full workloads indicates that this market is far from the one envisaged by economists when they talk about competition.

Technologic change. In addition to numbers of physicians, a major factor affecting costs is the pace and character of technologic change. In our pluralistic, heavily insured, malpractice-sensitive system, once a new technology is in place it tends to be used. Over the long run, technology, more than anything else, drives the cost of care. The technologic innovations that were introduced during the first half of the 1980s were mostly developed prior to the cost-containment efforts. It takes a long time to slow the pace of innovation. Unless this happens, however, other cost-containment efforts tend to have only a one-time effect. In the long run, changes in the rate, or at least the character, of technologic innovation must play a critical role in slowing the rate of growth of health care expenditures.

Technologic change depends in part on new scientific knowledge, but it also is affected by demand. The old cost-based reimbursement system tended to encourage any innovation that promised to improve the quality of care, regardless of cost. Manufacturers of drugs, equipment, and supplies contemplating investment in the development of such innovations did not have to worry about whether the prospective improvement was worth the increase in cost.[21] Under the prospective, closed-ended reimbursement that has been growing since 1980, developers of new technology are concerned much more with prospective benefit/cost ratios. This pressure probably will slow the overall rate of innovation and will shift the emphasis away from improving quality regardless of cost to innovations that are valued primarily for their cost-saving potential

Moreover there is an important distinction between potential technology (that is, knowledge of available technology) and technology actually in place. Potential technology is presumably the same in Great Britain as it is in the United States, but British physicians practice medicine at lower cost than American physicians, in large part because many technologic innovations are not available to them.

Thus it was unreasonable to expect the cost-containment efforts of the 1980s to have any marked effect on health care spending within just a few years. To slow spending; it is necessary to slow the rate of growth of services; there is little possibility for big savings either in productivity gains (in the narrow sense) or in depressing the price of inputs. The demand for services by patients can be affected by deductibles and coinsurance, but it seems unlikely that third-party payment will not always predominate. The major constraints on services, therefore, must come from the supply side: the number of physicians, their specialty distribution, their training, the incentives they face, and, most importantly, the facilities and technology at their disposal. Changes in these factors can come only with a long lag, but they probably will come if the large buyers of health care maintain and extend their cost-conscious behavior.

Distributional Effects

The cost-containment efforts did not slow the overall rate of growth of spending for health care but probably did affect the distribution of care. Between 1981 and 1986, the days of hospital care per 1,000 population declined more rapidly for the poor than for the nonpoor in both absolute and percentage terms. Similar disparities occured in trends for blacks compared to whites, and females compared to males.[22] The Johnson Foundation's national access surveys in 1982 and 1986 showed that access and utilization measures for the poor and minorities deteriorated relative to the nonpoor and whites.[23] This reversed the trend of the 1960s and 1970s, when differentials were narrowing. National Health Interview Survey data show the percentage of persons without any health insurance coverage rising from 11 percent in 1978 to 13.3 percent in 1986.[24] The trend in the late 1960s and early 1970s was toward increased coverage.

These distributional shifts should not be regarded as "unintended" effects of cost containment. They are inevitable if one seeks to eliminate cross-subsidization and to make patients more cost-conscious in their use of care. In the absence of third-party payment, each patient would make his or her own calculations of marginal benefit (versus marginal cost). The result would be different standards of care for different people because, other things equal, the trade-offs would depend on income. In the absence of cross-subsidies for insurance, the poor and the sick will decrease their purchases of insurance and use of medical care.

Critics of a single standard of care are correct in asserting that some people get more care than they want (in the sense that they would rather use the resources for something else) while some get less than they would want. However, the egalitarian approach can be justified for its symbolic value, or because it contributes to political stability, or because the wealthy do not want to redistribute money for them to use as they choose but are willing if the money is used for health care.

The Future of the Health Care Market

Dissatisfaction with the cost-containment effort is mounting. Critics say that it is not stemming the growth of expenditures, it is leaving more individuals with little or no insurance, and it is making life difficult and uncertain for the manufacturers of drugs, equipment, and other health care supplies. Some critics allege a decline in the quality of care, but the evidence offered is largely anecdotal.

Physicians blame cost containment for forcing them into new modes of practice and for their loss of power to managers and administrators. Some reorganization and loss of power was inevitable, but where physicians have taken the leadership in efforts to control costs (as in the prepaid group practices) there is greater potential to retain professional satisfaction than when controls on utilization are imposed from the outside.

A counterrevolution in health care finance is brewing, based on dissatisfaction and fear among many different elements.[25] At some point, a coalition of business interests, consumer advocates, and providers is likely to unite in a call for more federal involvement in health insurance and health care, although they will disagree on the form of that involvement.

Efforts to improve the current situation should be encouraged, but they should be based on realistic assessments of what has happened and what is possible. The failure of health spending to slow in the 1980s probably reflects the recency of the cost-containment efforts more than inherent ineffectiveness. Indeed, there has been a demonstrable impact on hospital utilization, which was the primary target.

Most importantly, any attempt to build a better system for providing health insurance and controlling health care must recognize certain fundamental problems. On the demand side, most people do not want to risk having to pay very large bills, so they seek health insurance, either privately or through government programs. Once individuals have insurance however, they want to consume more medical care than they would consume without it—and more than is socially optimal.

Another difficult policy problem is deciding when the premiums people pay for health insurance should be based on their expected utilization and when they should not. Most Americans seem to feel comfortable about having cigarette smokers pay higher premiums than nonsmokers, but even enthusiastic advocates of experience rating are uneasy about requiring individuals born with genetic defects to pay above-normal premiums. Where to draw the line? Is alcoholism, for instance, to be regarded as similar to cigarette smoking, or is it more analogous to a genetic disease?

There also are fundamental problems on the supply side of health care. Competition often is impossible or undesirable because of economies of scale. For instance, how many hospitals are needed to serve a population of 100,000 efficiently? Probably only one; at most two. Similar constraints apply to competition in physicians' specialty care, especially if the physicians work full-time at their specialties. It is doubtful that a population of one million is large enough to justify enough independent maternity services or open-heart surgery teams to approximate competitive conditions. Thus, it is wrong to think that competition can serve as the only control mechanism for health care.

Even in markets large enough to sustain large numbers of hospitals and physicians, it is not clear that the public interest is best served by insisting that health professionals maintain rigorous arm's-length competition with one another. Patients can benefit from cooperation among physicians and hospitals, in both reduced costs and better service.

This article began by noting the similarity between health care and other goods and services. The differences also are important. The patient/physician relationship often is highly personal and intimate, similar in many ways to relationships within families or between teachers and pupils or ministers and congregants. It is, in part, what Boulding calls an integrative relationship, one that depends on mutual recognition and acceptance of rights and responsibilities enforced by traditional norms as well as market pressures and government regulations.

The production function for health is a peculiar one; it usually requires patients and health professionals to work cooperatively rather than as adversarial buyers and sellers. Mutual trust and confidence contribute greatly to the efficiency of production. Thus the model of atomistic competition usually set as the ideal in economics textbooks often is not the right goal for health.

The necessity for dealing with dying and death also reveals the problematic nature of standard solutions based on fully informed consumers and competitive suppliers. There are, of course, many advantages to providing more information to the consumers of health care, but there also are potential disadvantages. If there is cost sharing, fully informed consumers will be forced to make painful decisions concerning limitations on care for loved ones, decisions that can leave a lifelong residue of guilt and regret. Not infrequently, families and society as a whole would prefer to have physicians take responsibility for these difficult decisions, keeping implicit rather than explicit the inevitable trade-offs between life and goods and services. If there is no cost sharing, patients and their families usually will want any care that could possibly help, regardless of cost. The rationing will have to come from the supply side, and full disclosure is unworkable.

The market is a subtle and powerful instrument of control, and competition is an important component in making markets work well. But Alain Enthoven has concluded that competition in health care must be managed, and that government must be one of the principal managers.[26] Moreover, I believe we err in thinking that the only options are markets or government regulation. There is room for, indeed need for, a revitalization of professional norms as a third instrument of control in health care. As long as physicians continue to perform priestly functions, as long as they are our ambassadors to death, as long as they control the introduction of new technology, they must be endowed with certain privileges and held to certain standards of behavior different from those assumed by the market or regulation models.

In my view, we will never be able to introduce enough direct patient payment into the system to make that a significant instrument of cost containment. Thus, we inevitably will have to rely on physicians and other health professionals to do much of the rationing. How equitably and how efficiently they do that, along with constraints on supply and on the quantity and character of technologic change, will determine the success of cost containment in the long run.

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NOTES

1. "The integrative system . . . involves such things as status, identity, love, hate, benevolence, malevolence, legitimacy—the whole raft of social institutions which defines roles in such a way that you do things because of what you are and because of what I am, that is, because of some kind of status or respect." Kenneth Boulding, "Economic Libertarianism," in *Beyond Economics* (Ann Arbor, Mich.: University of Michigan Press, 1968), 44.
2. See Victor R. Fuchs, "Health Care and the United States Economic System: An Essay in Abnormal Physiology," *Millbank Memorial Fund Quarterly* (April 1972):211-237.
3. Adam Smith, *The Wealth of Nations* (1776)(New York: The Modern Library, 1937), 128.
4. Alfred Marshall, *Principles of Economics*, 8th ed. (1890)(London: Macmillan, 1936).
5. Mathematically, it means that the demand curve facing each seller (or supply curve facing each buyer) is completely horizontal.
6. Larry K. Simmons, "Hospital Profits During the Second Year of PPS," testimony before the Subcommittee on Health of the Ways and Means Committee, U.S. House of Representatives, 26 February 1987.
7. Reuben Kessel, "Price Discrimination in Medicine," *Journal of Law and Economics* (October 1958):20-53.
8. John K. Galbraith, *American Capitalism* (Boston: Houghton Mifflin Co., 1956).
9. Judith Feder, Jack Hadley, and Stephen Zuckerman, "How Did Medicare's Prospective Payment System Affect Hospitals?" *The New England Journal of Medicine* (1 October 1987):867-873.
10. Glenn A. Melnick and Jack Zwanziger, "Hospital Behavior under Competition and Cost Containment Policies: The California Experience 1980-1985" (Santa Monica, Calif.: The RAND Corporation, 1987 mimeo).
11. James C. Robinson and Harold S. Luft, "Competition and the Cost of Hospital Care, 1972 to 1982," *Journal of the American Medical Association* (19 June 1987):3241-3245.

12. Willard G. Manning et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *American Economic Review* (June 1987):251-277. According to the general law of demand, the lower the price, the greater the quantity demanded.

13. Deflated by the implicit gross national product (GNP) deflator.

14. These calculations were made from computer tapes of the Current Population Surveys of March 1980 and March 1986. Overall, real earnings of American workers declined between 1979 and 1985; this analysis focuses on differential rate of change by sector.

15. Victor R. Fuchs, "Sex Differences in Economic Well-Being," *Science* (25 April 1986):459-464.

16. These are the groups with the largest number of workers in health care.

17. The number of persons covered increased at the same rate after 1980 as in the 1970s, a bit less than 2 percent per year.

18. The Robert Wood Johnson Foundation, Special Report, "Access to Health Care in the United States: Results of a 1986 Survey," no. 2(Princeton, N.J.: The Robert Wood Johnson Foundation, 1987).

19. Feder et al., "How Did Medicare's PPS Affect Hospitals?"

20. Ross Mullner, Peter Kralovec, and David McNeil, "45 Percent More Community Hospitals Closed in '86," *Hospitals* (5 May 1987):32-34.

21. See, for instance, Henry G. Grabowski, "Health Care Cost Containment and Pharmaceutical Innovation," *Pharmaceuticals for the Elderly: New Research and New Concerns* (Pharmaceutical Manufacturers Association, 1986), reprinted by The Center for the Study of Drug Development, Tufts University.

22. National Center for Health Statistics, A.J. Moss and M.A. Moien, "Recent Declines in Hospitalization: United States, 1982-86," *AdvanceData from Vital and Health Statistics,* no. 140, DHHS Pub. no. (PHS)87-1250 (Hyattsville, Md.: Public Health Service, 24 September 1987).

23. The Robert Wood Johnson Foundation, Special Report.

24. National Center for Health Statistics, Peter Ries, "Health Care Coverage by Age, Sex, Race, and Family Income: United States, 1986," *AdvanceData From Vital and Health Statistics,* no. 139, DHHS Pub. no. (PHS)87-1250 (Hyattsville, Md.: Public Health Service, 18 September 1987).

25. Victor R. Fuchs, "The Counterrevolution in Health Care Financing," *The New England Journal of Medicine* (30 April 1987):1154-1156.

26. Alain C. Enthoven, "Managed Competition in Health Care and the Unfinished Agenda," *Health Care Financing Review* (Annual Supplement 1986):105-119; and Alain C. Enthoven, "Managed Competition: An Agenda for Action," in this volume of *Health Affairs.*

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Doctor's Countersuit Gets to the Heart of It

PATRICIA G. BARNES

A Waterbury cardiologist has turned the tables on a Hartford lawyer who unsuccessfully sued him for malpractice.

William A. Moller of Hartford's Moller, Horton & Fineberg recently paid Dr. James F. Flint $99,000 to withdraw a countersuit charging Moller with vexatious litigation.

It may be the first case, at least in recent years, in which a physician has successfully pursued a lawyer through Connecticut's legal system. A trial in the case was imminent.

Moller sued Flint in 1980 on behalf of Virginia Bothroyd, the widow of Clayton S. Bothroyd, who died in 1979 after suffering a possible reaction to a drug used to treat heart rhythm disturbances. She was not named as a defendant in the countersuit.

Flint, who was assisted in the action by the Connecticut State Medical Society, hailed the settlement as a victory for all physicians who are faced with unfounded malpractice suits.

Moller declined to return telephone calls. His attorney, Joseph G. Lynch of Hartford's Halloran, Sage, Phelon & Hagarty, said he would not comment on the case as a matter of policy.

Moller withdrew the malpractice complaint after eight weeks of trial in 1983 when Litchfield Superior Court Judge M. Morgan Kline refused to allow the testimony of a pharmacologist who was to be a key expert witness. Flint said the judge disallowed the testimony because the pharmacologist was not a physician and could not testify as to malpractice. And, Flint said, Moller failed to produce any physician to testify that Flint had committed malpractice.

Flint's attorneys, Carter LaPrade and Margaret A. Little of New Haven's Tyler Cooper & Alcorn, say the settlement demonstrates that a malpractice litigation does not have to be the equivalent of a chronic disease for a physician.

"Doctors in the situation of John Flint are not defenseless," said LaPrade. "They can fight back and do so successfully."

In fact, LaPrade said tort reform measures passed by the General Assembly in 1986 will make it easier for physicians who are unfairly sued to exact a measure of justice from their accusers. Unlike Flint, he noted, future plaintiffs do not have to prove malice.

LaPrade said most physicians and insurance carriers are tempted to settle even bogus malpractice claims, resulting in an increased number of such claims and higher medical costs for everyone. Those who do go ahead, he said, frequently are content to let the matter rest after a decision is rendered. He said the legislature, as a matter of public policy, is attempting to discourage meritless suits.

Flint, a staff physician at Waterbury Hospital, said he had never been sued prior to the Bothroyd case. He practiced medicine for almost 15 years.

"It was the most devastating thing to be sued," said Flint. "It was an attack on my integrity and competence. It was central to my being."

Flint said his malpractice insurance carrier, Aetna Casualty and Surety Co. of Hartford, initially wanted to settle the case. In fact, Flint said, Aetna informed him that it had a policy of settling malpractice cases—even if there was no evidence of wrongdoing—for up to 10 percent of the potential liability. He said the company today allows physician to decide whether or not to defend the case.

"It struck me as outrageous," said Flint, regarding the prospect of a settlement. "It was really unacceptable for me to be sued unless I had done something wrong."

Aetna reconsidered after Flint protested and the company assigned Augustus R. Southworth of Gager, Henry & Narkis of Waterbury, to represent him.

Though he believes the system ultimately worked, Flint said his odyssey through the court system left him disillusioned.

"It's unfair to a defendant," said Flint. "Once you've been sued you've already lost. The only question is how much." Also, he said, lawyers can justify any deviation from the "letter of the law" when it suits their purpose.

He estimated he lost $20,000 in income as a result of time spent preparing for and attending the trial. Flint said he didn't lose any patients but suffered embarrassment, particularly as a result of newspaper coverage of the allegations. One evening after a day of trial, he said he stopped at a gas station and the owner, a patient, quipped, "How come I'm going to see you?"

Merely prevailing in the malpractice case wasn't enough, he said.

Since Southworth was a potential witness in the vexatious litigation suit, he could not represent Flint.

PATRICIA G. BARNES, Staff Reporter for *The Connecticut Law Tribune*.

Reprinted with permission from *The Connecticut Law Tribune*, Stamford, CT, August 22, 1988.

Flint said Southworth, who declined comment, provided him a list of nine top trial lawyers in the state. Eight refused, for various reasons, to take the case. Flint then attempted unsuccessfully to persuade the late New York City lawyer Roy Cohn to take the case. The remaining lawyer on Southworth's list was former Tyler Cooper & Alcorn attorney Lawrence Ianotti, who was vacationing when Flint attempted to reach him.

Ianotti, now a professor of law at Washington University, agreed, with the consent of the firm's partners, to take the case on a hourly fee basis.

Then arose the problem of money.

Flint applied for assistance to the Connecticut State Medical Society, which had a fund to defend malpractice claims that had not been tapped in five years of existence. Flint said his case was reviewed by the society, a panel of 15 to 20 cooperating physicians, and a professor of cardiology at Yale University. The society ultimately agreed to put up $150,000 to finance the litigation against Moller.

If Flint had lost the case, he would have had no obligation to repay the money. As it is, Flint said, he repaid the society in full for legal costs out of the settlement. He declined to estimate the amount of legal costs incurred in the suit.

Conceding that physicians make a healthy income, Flint said it still would have been difficult for him to finance the suit had it gone to trial *and* to pay schooling costs for his children.

Flint indicated that he and Moller had developed more than the usual amount of antagonism between a defendant and a plaintiff's attorney.

The suit charged Moller prosecuted Flint without probable cause and "with a malicious intent unjustly to vex and trouble the plaintiff."

During his deposition in the Bothroyd case, Flint said, "I was the victim of character assassination. Moller made an outrageous attack . . . incredible comments that had nothing to do with the case." At LaPrade's urging, he declined to be more specific.

Flint said Moller called at least a half-dozen physicians as witnesses during the trial but that none testified he was guilty of malpractice. He said Moller then called him to the stand as an expert witness and "attempted to fake me out. I testified [that] I thought the care was superb."

Moller's effort to qualify the pharmacologist as an expert witness may have been a last ditch measure to salvage his case.

Flint said the pharmacologist was engaged in research on chicken embryo heart cells at the University of Connecticut. During testimony to qualify him as an expert, Flint said, the pharmacologist indicated he would testify about the implications of his research on humans and that the antiarrhythmic drug administered to Bothroyd had caused his death.

The judge allowed Moller to withdraw the case over Flint's objections.

Flint already had planned to sue Moller for vexatious litigation and knew that one requirement for winning such a suit is the favorable termination of the prior suit. Also, Flint said, "I thought I should have the decision."

He didn't sue Bothroyd's widow because, "I'm sorry that she went through all that.... It's such a waste of life energy to do that stuff."

LaPrade, who is a partner in Tyler Cooper & Alcorn, concedes that a suit against a fellow lawyer—indeed, a prominent trial attorney in the state—could be construed as an unpopular move by the bar.

"I didn't worry about the reaction of the bar when I assessed the case," he said. "I was more worried that it was a more difficult case than [Ianotti] had thought.

"It didn't make strictly economic sense . . . . Jim persuaded me that there was a principle at stake here," he said.

Little, an associate, noted that Moller obtained excellent counsel. Even though the case ended in a settlement, she said, "We expected sustained opposition from the defense. We expected a battle and we got one."

M.D. Enterprises of Connecticut

Progress Report

ROBERT J. BRUNELL

Introduction

TWO years ago physicians throughout Connecticut joined together in an attempt to counteract the insurgence of national HMOs on the Connecticut health care scene and to stay the erosion of competition among existing health plans, as Blue Cross/Blue Shield continued to increase its market share and influence on the industry. The outcome of this gathering was the formation of their own HMO and subsequent to that time, a holding company to ensure all Connecticut physicians would retain a say on how medical care would be practiced now and in the future. The holding company (M.D. Enterprises of Connecticut, Inc.) was key to their long term success because its formation gave physicians the ability to diversify their business repertoire moving into new service and program areas that the HMO alone could not do.

Since that time, as these physicians accurately predicted, seven new HMOs have established market share in Connecticut, five of which are headquartered outside the state and *none* of which provide for individual physician ownership.

In addition, Blue Cross/Blue Shield has expanded its role in the HMO market, taking over operations of HealthCare, Inc. of New Haven (68,000 enrollees) and increasing its staff model (CHCP, Inc. 73,000 enrollees) to where today they have offices in seven sites covering New Haven and Fairfield Counties and parts of central Connecticut. Physicians associated with CHCP have no ownership in the Plan and instead work as employees of Blue Cross/Blue Shield. Like CHCP, Kaiser Permanente, the other staff model HMO, increased its market share in Hartford and Fairfield County and subsequently merged with a Massachusetts HMO, a move that resulted in an enrollment of more than 96,000 members.

This trend continues today. PruCare, Inc. a subsidiary of Prudential Insurance Corporation and Met Life a subsidiary of Metropolitan Insurance Corporation are looking to enter the Connecticut market place shortly. Still others, such as U.S. HealthCare, seek to expand to more and more areas throughout the state.

PHS, Inc., ConnectiCare, HealthCare, Inc., and Constitution Health Network (CHN), although starting out as "physician oriented" HMOs, have either given a sizable portion of that ownership over to hospitals or management, or been consumed by Blue Cross/Blue Shield of Connecticut. Of all the HMOs in Connecticut, only M.D. Health Plan remains totally physician owned and controlled.

M.D. Enterprises of Connecticut, Inc.

Physicians can be proud of M.D. Enterprises' and its subsidiary HMO, M.D. Health Plan's, accomplishments since it began operations in October 1987.

The Company from the beginning viewed itself as more than just another HMO. In just a little over nine months it has not only developed one of the fastest growing HMOs in Connecticut, but has diversified into other areas of managed care. This diversification is a deliberate attempt to secure new revenue sources to combat the ensuing competition in the industry as discussed above.

Additionally, it gives physicians the means to adopt to the changing "landscape" of managed care and capitalize on new opportunities as they arise. This is already evident in the company's newest product called "ChoicePlan" which will be elaborated on below.

M.D. Health Plan (A New Generation of HMO)

M.D. Enterprises of Connecticut's first subsidiary corporation, M.D. Health Plan, was established to provide employers and their employees with an HMO option oriented toward quality care and reducing further fragmentation of the health services delivery system. In spite of the criticism heaped on Connecticut physicians from other HMOs over this open-access policy, data show no disproportionate utilization of specialty care versus primary care services. Indeed, total cost of all professional services is trending lower than expected.

M.D. Health Plan is a new generation of HMOs and can boast of several other unique qualities like an open access system that set it apart from the rest.

Statewide Representation

No other HMO in Connecticut has a statewide presence nor a delivery system as geographically dispersed or as accessible as M.D. Health Plan's. Its members may use all 36 community hospitals. This broad based physician panel and hospital network provide opportunities for employers through a single contract to

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ROBERT J. BRUNELL, M.A., Director of Scientific Activities, Connecticut State Medical Society.

provide an HMO option regardless of residence of employees. In addition, employers desirous of reducing the time and cost of managing several HMO contracts simultaneously can have their needs and their employees' needs met through a single agreement with M.D. Health Plan.

Modified Premium Rating

M.D. Health Plan can offer more competitive rates for some employer groups because it is not limited by traditional community rating requirements common to federally qualified plans. M.D. Health Plan provides employers a custom rate based on the employer group demographics. To date this methodology has met with great success in the market when compared to traditional HMO rating schemes employed by the competition.

Market Multiple Benefit Programs

M.D. Health Plan will provide multiple benefit programs to appeal to a variety of employers. Packages will include an *ultra plan* for employers not wishing to require employees to pay any copayments for physician office visits. Philosophically, this program will appeal to employers who believe such financial obstacles delay individuals in getting the care they need resulting in greater cost in services in the future as medical problems worsen. M.D. Health Plan's *standard plan* will attract employers looking for comprehensive coverage with small copayments by employees. These employers believe employees should participate in paying a portion of their health care cost and often extend this thinking to premiums by limiting the employer's contribution. The *basic plan* is approximately 15% less than the standard plan premiums. Small to medium size employers who cannot afford the ultra or standard plan coverage will find the basic plan affordable while retaining the comprehensive coverage nature of the other plans. To complement these coverage programs, MDHP will offer various optional benefits beginning with pharmacy and adding vision services and health promotion programs. The several benefit programs provide tremendous underwriting flexibility allowing M.D. Health Plan to compete adequately with other HMOs and indemnity carriers. The approach to the market is to "price-compete" through flexible benefit structuring or "benefits-compete" through flexible underwriting of premiums and favorable demographics. It is the expectation that favorable premiums (particularly among employers who require an out-of-pocket-employee contribution) will yield increased market penetration.

Broker Program

M.D. Health Plan has instituted a statewide Broker Program geared to maximizing the contact and trust established between brokers and employers in Connecticut. Currently in excess of 250 agents statewide are marketing M.D. Health Plan. Special underwriting techniques and benefit programs were instituted to protect M.D. Health Plan from additional risk associated with "field underwriting" programs of this type. To date 25% of our contracts come through the Broker Program.

Health Promotion/Health Education Programs

On 1 April 1988, M.D. Health Plan began a formal HMO based Health Education/Health Promotion program available to employers and employees in Connecticut. The program is not limited exclusively to M.D. Health Plan members but may be accessed by all employees. It emphasizes preventive care focused on employers' needs with regard to: stress management, substance abuse, fitness, obesity treatment, and smoking cessation. Other areas may be added depending on the individual circumstance.

Small Group/Individual Market

Fully 60% of employed individuals work in employer groups of 70 or fewer employees. This market traditionally is untapped by HMOs. Through the broker network, flexible premium structure and diverse benefit programs, M.D. Health Plan is pursuing this market segment.

This represents a few characteristics of M.D. Health Plan that distinguish it from other HMOs and indemnity insurers. Consequently, many HMOs around the state have stopped criticizing M.D. Health Plan and have begun to follow its lead. If imitation is truly the best form of flattery than Connecticut's physicians may be proud to see that a number of HMOs are expanding their service area in an attempt to become statewide, formulating health education and promotion programs, employing new premium rating methodologies, and seeking enrollment from market segments that heretofore were untapped.

M.D. Health Plan's Performance

Newspapers in Connecticut have not been kind to HMOs with reports of Plans losing considerable money over the past two years. Although basically true, they fail to recognize the difference between start-up HMOs which plan their deficits versus mature or large HMOs whose costs are out of control. This difference is significant if one is to compare HMO performance. For example, the Hartford Courant recently reported CHCP, Inc. of New Haven lost $2,673,320 in the second quarter of 1988. The same article reported MDHP lost $603,371 for the same period. CHCP's losses for the first half of 1988 are greater than four million dollars and exceeded projections, a problem which they attributed to excess hospital costs. M.D. Health Plan's losses for the first half of 1988 were $1,234,139 as compared to projections of $1,320,947. In other words, the Plan's losses were 6.6% less than projected. For the same period medical costs were in line with expectations.

In summary the Plan is drawing fewer dollars than anticipated from reserves. The savings provides greater financial cushion to the Plan against future aberrant behavior of financial assumptions.

Because all HMOs must go through a "pre-breakeven" period on the road to success, the key ingredient ensuring financial viability is to project accurately the anticipated losses and provide adequate financing to meet those losses.

Two key medical cost performance areas are hospital utilization and IPA capitation. In combination these expense categories constitute 90% of all medical cost. For the period between January 1988 and June 1988, M.D. Health Plan's hospital utilization, as measured in patient days per 1,000 enrollees, shows utilization to be under budget by 20%; budgeted hospital days being 500.3 and actual days incurred 399.9. For the same period the IPA reports physician services were also under projection. As a result the IPA intends on returning 100% of fees withheld at the completion of the contract year.

This performance is not speculation. It is fact and documented with the Department of Insurance, State of Connecticut.

There is reason to believe this trend will continue. This is evidenced by the cooperation received from participating physicians, and by the state-of-the-art utilization review and quality assurance programs. Specifically, included in this program is a statistical based, standard of medical practice quality assurance program for *ambulatory* services. This program measures physician performance against practice standards to be established by Connecticut physicians for specific procedures and diagnosis performed on an outpatient basis. The program is the first of its kind to be used in New England and considers other factors such as age, sex, and severity of illness in its evaluation of physician treatment patterns. The system is fully computerized and will provide M.D. Health Plan with an objective evaluation of physician practice patterns moving away from the arbitrary and capricious utilization control programs employed by other HMOs.

Bringing M.D. Health Plan to profitability is a great undertaking. As a statewide Plan, it requires greater marketing and advertising cost than smaller regional HMOs. Historically, all HMOs expend significant funds before reaching breakeven. The Federal government provided millions of dollars through its HMO grant and loan program in which several other Connecticut HMOs participated. The federal loan program ended in 1981 leaving the private sector to finance new developments. Consequently, the market became dominated by large insurance companies, for-profit hospital chains, and entrepreneurs who could underwrite initial start-up costs. Today newly formed HMOs sponsored by these types of organizations are spending many millions of dollars annually to gain a foothold in the HMO market.

M.D. Health Plan competes with several of these companies here in Connecticut. In spite of not having "deep financial pockets", M.D. Health Plan has grown faster in enrollment and revenue than other Connecticut Plans in operation less than one year. In addition, 42% of M.D. Health Plan's annual overhead (i.e. nonmedical expenses) is spent on marketing and member services related activity. This is proportionately appropriate to total administrative cost when comparing M.D. Health Plan with other start-up HMOs and indicates M.D. Health Plan expenditures attributed to business procurement to be consistent with industry standards.

Looking To The Future

As mentioned above, M.D. Enterprises was formed to enable physician owners to engage in other enterprises beyond the HMO. As the marketplace changes, the company needs to adapt to these changes. One such change occurring is in the employer self-funded health coverage program.

M.D. Enterprises of Connecticut, Inc. on 1 July 1988, in conjunction with Stirling & Stirling, Inc. of New Canaan, Connecticut, began offering employers who traditionally self-fund their employees' health benefit programs a dual option program called ChoicePlan. ChoicePlan gives employees access to a wide selection of physicians and hospitals through an established network of providers under contract with M.D. Enterprises of Connecticut, Inc. Employees may either use this network at a nominal copayment fee or choose to use providers outside the network and incur a substantial out-of-pocket expense.

ChoicePlan members represent patients who would otherwise not be available to join M.D. Health Plan since their employers self-fund their insurance coverage. This venture gives physicians access to a large group of new patients and thereby gives M.D. Enterprises access to new revenues.

ChoicePlan is unique in that it is the only self-funded program in the country to offer a statewide physician network with the cost containment components of successful managed care organizations.

Under the relationship with Stirling & Stirling, M.D. Enterprises of Connecticut, Inc. will provide the health services delivery system network, automated data processing services and utilization management and quality assurance functions. Stirling & Stirling serves as the Third Party Administrator, who, along with M.D. Enterprises, contracts with the employer to administer the employer's self-funded program.

Enrollment projections for ChoicePlan's first year of operation are expected to exceed 12,000 new enrollees and revenues generated from this enrollment will be used to offset the HMO's deficits. After the first two months of operations ChoicePlan's enrollment exceeds 700 members.

Summary

As good as Connecticut physicians are as prognosticators of the future of managed care in the state, the decision to start their own HMO didn't come from vision but more as reaction to the erosion of private practice of medicine brought on by the encroachment of nonmedical influences motivated by economic gain and control.

As this phenomenon continues to grow nationwide, Connecticut is being watched by other states to see how well physicians will fare in this period of change. Insurance companies understand the collective influence physicians potentially have over a multibillion dollar health care industry and seek to continue to confuse and fragment their numbers. One way to explain how influential and powerful physicians can be is to examine hypothetically the potential dollars attributed to the patient care directed by M.D. Health Plan's existing 1650 physicians:

1. 1650 physicians x
2. 250 working days/year =
3. 412,500 physician days/year x
4. 20 patients/day =
5. 8,250,000 patient visits/year ÷
6. 2.5 visits/patient (average number of visits per patient) =
7. 3,300,000 patients/year ÷
8. 2 patients/1 eligible HMO enrollee =
9. 1,650,000 eligible enrollees x
10. $1,140 (annual health care cost per enrollee) =
11. $1.9 billion total health care expenses

As evidenced by this analysis there is great potential and incentive for M.D. Enterprises of Connecticut to move in new directions. The physician still is the "captain of the ship" deciding where the dollars will be spent and who is to control the expenditure. There is no reason physicians need to turn over this economic power to outsiders, when they possess the organization and skill to manage it themselves.

(This announcement is neither an offer to sell nor a solicitation of an offer to buy securities. The offer is made only by the Prospectus.)

Hospital Discharges and Average Length of Stay

AMA CENTER FOR HEALTH POLICY RESEARCH

PHYSICIANS discharged an average of 4.6 patients per week from the hospital in 1987. Among patients discharged, the average length of stay in the hospital was 5.2 days. The number of patients discharged and average length of stay provide measures of hospital utilization by physicians. Variations in discharges and lengths of stay by specialty and geographic areas provide insight into the relative use of hospitals by physicians in different specialties and geographic areas.

Examination of discharges and length of stay across five major specialty categories indicates that general and family practice physicians discharged the fewest patients per week, 3.3, and obstetricians the most, 7.0. The average length of stay was 5.4 days among patients discharged by general and family practice physicians and 3.3 days among patients discharged by obstetricians. Pediatricians discharged 5.8 patients per week and their patients spent an average of 5.9 days in the hospital. Surgeons discharged 5.5 patients per week with an average length of stay of 4.2 days per patient. Internists discharged 4.8 patients per week with an average length of stay of 6.4 days per patient.

Discharge and length of stay information is also examined among internal medicine and surgical subspecialties. Among internists, cardiovascular disease physicians discharged the most patients per week, 7.2, with an average length of stay of 5.9 days per patient. Excluding ophthalmologists, surgical subspecialties ranged from 7.4 discharges per week among urologists to 6.1 among orthopedists. Ophthalmologists averaged 1.1 discharges per week and had an average length of stay of 2.1 days per patient.

Variations across Census Divisions indicate that physicians in the East South Central Census Division discharged the most patients per week, 6.4, and physicians in New England discharged the fewest, 3.5. The average length of stay among discharged patients was highest in the East North Central, 6.9 days per patient, and lowest in the Mountain Census Division, 4.1 days per patient.

Figures on discharges and length of stay are also available for 10 states. Among these states, physicians in Florida had the highest number of discharges per week, 6.0, and New Jersey the fewest, 3.6. Patients of physicians in California and Texas averaged the fewest days in the hospital per stay, 4.4, and patients of physicians in

Michigan the most, 6.4 days per patient.

Multiplication of the number of patients discharged per week per physician by the average length of stay per patient provides a measure of overall hospital use by physicians' patients in an average week. Overall, physicians' patients spent an average of 23.9 days per week per physician in the hospital. Cardiovascular disease physicians' patients spent an average of 42.5 days per week per physicians in the hospital, the highest level among all physicians. Among surgical subspecialists, general surgeons' patients spent the most days in the hospital, 35.3 days per week per physician, and ophthalmologists' the least, 2.3 days per week per physician.

Patients in the East South Central Census Division spent the most days in the hospital, 37.8 per week per physician and patients in the Pacific Census Division spent the fewest days, 16.7 per week per physician. Patients in Ohio averaged 30.2 days per week per physician in the hospital compared with California patients who averaged 17.2 days per week per physician.

Table 1

Average Number of Patients Discharged per Week and Average Length of Stay per Patient, by Specialty, 1987*

	Patients Discharged per Week	Average Length of Stay (Days)
All Physicians *	4.6	5.2
General/Family Practice	3.3	5.4
Internal Medicine	4.8	6.4
General Internal Medicine	4.1	6.2
Cardiovascular Diseases	7.2	5.9
Surgery	5.5	4.2
General Surgery	7.2	4.9
Otolaryngology	6.3	1.7
Orthopedic Surgery	6.1	5.0
Ophthalmology	1.1	2.1
Urological Surgery	7.4	4.1
Pediatrics	5.8	5.9
Obstetrics/Gynecology	7.0	3.3

SOURCE: 1987 Socioeconomic Monitoring System Core Survey of nonfederal patient care physicians excluding residents.

*Excluded radiologists, psychiatrists, anesthesiologists, and pathologists, but otherwise included physicians in specialties not listed separately.

Further information on number of patients discharged and average length of stay, including Medicare discharges and average length of stay per Medicare patient, is available from the AMA'a newest publication, *Physician Marketplace Statistics 1988.* This publication provides information on a variety of physician practice characteristics for 10 states, 9 census divisions and 17 specialties, including 2 internal medicine subspecialties, 5 surgical subspecialties, and emergency medicine. In addition, information is broken out by practice arrangement and size of practice. The information in the new volume is from the 1987 Socioeconomic Monitoring System core survey of nonfederal patient care physicians excluding residents.

Table 2

Average Number of Patients Discharged per Week and Average Length of Stay per Discharged Patient, by Geographic Area, 1987 *

	Patients Discharged per Week	Average Length of Stay (Days)
Geographic Area **		
New England	3.5	5.1
Massachusetts	3.9	6.1
Middle Atlantic	4.2	5.5
New Jersey	3.6	6.3
New York	3.7	5.4
Pennsylvania	5.8	5.0
East North Central	4.5	6.9
Illinois	4.4	6.0
Michigan	4.6	6.4
Ohio	4.8	6.3
West North Central	5.4	5.4
South Atlantic	4.9	4.8
Florida	6.0	4.7
East South Central	6.4	5.9
West South Central	5.0	4.3
Texas	4.7	4.4
Mountain	4.5	4.1
Pacific	3.9	4.2
California	3.9	4.4

SOURCE: 1987 Socioeconomic Monitoring System Core Survey of nonfederal patient care physicians, excluding residents.

*Excludes radiologists, psychiatrists, anesthesiologists, and pathologists.

**Census Divisions include states not listed separately.

—SMS Report, May 1988

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EPIDEMIOLOGIC NOTES AND REPORTS

Cholesterol Awareness in Selected States - Behavioral Risk Factor Surveillance, 1987

CENTERS FOR DISEASE CONTROL

OVER the past ten years, the association between high levels of serum cholesterol and increased risk of coronary heart disease (CHD) has been well documented.[1] In addition, a growing body of evidence demonstrates that individuals with elevated cholesterol levels can reduce their risk of CHD by lowering their serum cholesterol and that a 1% decline in serum cholesterol results in a 2% decline in the risk of cardiovascular disease.[2] The 3%-4% decline in serum cholesterol reported among U.S. adults from 1960 to 1980 has probably contributed to the overall decline in CHD mortality observed during this period.[3]

In November 1985, the National Heart, Lung, and Blood Institute (NHLBI) initiated the National Cholesterol Education Program (NCEP), a cooperative undertaking by health organizations in the United States.[4] The goal of the program is to contribute to lowering the morbidity and mortality from CHD by reducing the prevalence of elevated serum cholesterol in this country.* The NCEP focuses on public education; its central theme is "Know your blood cholesterol number." Individuals are encouraged to ask about serum cholesterol the next time they see their doctor; to have their cholesterol tested if they have not already done so; to know their number, or level; and to learn whether their cholesterol level needs to be lower.

To determine the proportion of adults who report having taken these steps, data from the 33 states (including the District of Columbia) that participated in the 1987 Behavioral Risk Factor Surveillance System (BRFSS) were analyzed. Since 1984, state health departments have collected these data by conducting telephone surveys of the adult residents of their states.[5] Telephone surveys using random-digit dialing are conducted every month throughout the year, and approximately 1,500 interviews are completed annually in each state. Respondents are selected randomly from all adults living in each household. The results presented here are weighted to account for the age, race, and sex distribution of adults in each state in 1980 as well as for the respondents' probability of selection.

The 1987 survey included three questions regarding cholesterol testing and awareness. Respondents were asked whether they had ever had their cholesterol tested. If so, they were asked whether they had been told their cholesterol level, and those who had been given this information were asked what their level was.

The proportion of adults in each state who reported having had their cholesterol tested ranged from 29% to 57%, with a median of 47%. The proportion of adults who reported being told their value ranged from 3% to 29%, with a median of 19%. Finally, the proportion of adults who were able to provide a value for their cholesterol ranged from 1% to 9%, with a median of 6%.

Although current levels of individual cholesterol awareness in the United States are low, they appear to be increasing. Surveys conducted by the NHLBI in 1983 and again in 1986 show that the proportion of adults in the United States who reported that their serum cholesterol had been checked rose from 35% to 46%, and the proportion who claimed to know their cholesterol rose from 3% to 7%.[6] The proportion of U.S. adults who had had their cholesterol tested (46%) and who knew their cholesterol level (7%) in 1986 are similar to the median values of the states participating in the 1987 BRFSS (47% and 5%).

Reported by: R Strickland, Alabama Dept of Public Health. T Hughes, Arizona Dept of Health Svcs. L Parker, California Dept of Health Svcs. C Mitchell, District of Columbia Dept of Human Svcs. S Hoecherl, Florida Dept of Health and Rehabilitative Svcs. JD Smith, Georgia Dept of Human Resources. E Tash, Hawaii Dept of Health. J Mitten, Idaho Dept of Health and Welfare. B Stiner, Illinois Dept of Public Health. S Joseph, Indiana State Board of Health. K Bramblett, Kentucky Cabinet for Human Resources. M Gay, Maine Dept of Human Svcs. A Winestein, Maryland State Dept of Health and Mental Hygiene. L Koumjian, Massachusetts Dept of Public Health. N Salem, Minnesota Center for Health Statistics. M Van Tuinen, Missouri Dept of Health. R Moon, Montana State Dept of Health and Environmental Sciences. R Thurber, Nebraska State Dept of Health. K Zaso, New Hampshire State Dept of Health and Welfare. L Pendley, New Mexico Health and Environment Dept. H Bzduch, New York

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* A serum cholesterol level of 240 mg/dl or greater is considered "high"; 200 to 239 mg/dl is considered "borderline-high"; and less than 200 mg/dl is considered "desirable"[4].

Morbidity and Mortality Weekly Reports, Vol. 37, No. 19, 1988.

State Dept of Health. C Washington, North Carolina Dept of Human Resources. B Lee, North Dakota State Dept of Health. E Capwell, Ohio Dept of Health. J Cataldo, Rhode Island Dept of Health. D Lackland, South Carolina Dept of Health and Environmental Control. L Post, South Dakota State Dept of Health. D Ridings, Tennessee Dept of Health and Environment. J Fellows, Texas Dept of Health. C Chakley, Utah Dept of Health. K Tollestrup, Washington Dept of Social and Health Svcs. R Anderson, West Virginia State Dept of Health. R Miller, Wisconsin Center for Health Statistics. Div of Nutrition, Center for Health Promotion and Education, CDC.

Editorial Note: The proportion of adults who reported having had their cholesterol tested varied widely from state to state. This variation may reflect differences either in the availability and use of public or private cholesterol testing or in the respondents' awareness of the results of past testing.

Fewer than one in ten adults in the states participating in the BRFSS claimed to know their cholesterol value. This low level of awareness appears to result from several factors. First, fewer than half of the adults who had had their cholesterol tested said that they were told their value, and second, fewer than a third of those who were told their cholesterol level remembered it.

In recognition of the need for federal, state, and local activities supporting cholesterol awareness, April 1988 has been designated as "National Know Your Cholesterol Month[4]". Efforts such as this should be continued to encourage all adults to have their cholesterol tested, to encourage health-care providers to inform patients of their cholesterol value and its significance, and to help individuals to "know their numbers."

Continuing the downward trend of serum cholesterol levels in the United States will depend initially on improved awareness. However, long-term progress in reducing risk from elevated cholesterol will require broad, population-based changes in diet as well as adherence to drug regimens, when warranted. Data from the BRFSS can be useful in planning and monitoring the progress of population-based programs to improve cholesterol awareness.

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Prevalence of Human Immunodeficiency Virus Antibody in U.S. Active-Duty Military Personnel, April 1988

IN January 1986, the U.S. Department of Defense began screening all active-duty military personnel for antibody to the human immunodeficiency virus type 1 (HIV-1). A total of 1,752,191 persons who remained on active duty as of April 24, 1988, were screened. HIV-1 antibody was confirmed by Western blot in 2,232 (1.3 per 1,000) of these persons.

Information from the armed forces' Reportable Disease Data Base was used to determine the demographic distribution of HIV-1-antibody seroprevalence rates. Antibody prevalence by age ranged from 0.1 per 1,000 for those aged 17-19 years to 2.1 per 1,000 for those aged 25-29 years. Blacks were 3.6 times and Hispanics 2.5 times more likely than non-Hispanic whites to have HIV-1 antibody. Although blacks and Hispanics constituted 50.7% of those who were HIV-1-antibody-positive, they represented only 23.4% of all active-duty personnel. Seroprevalence was highest in men, unmarried persons, and enlisted personnel.

Morbidity and Mortality Weekly Reports, Vol. 37, No. 30, 1988.

Reported by: MR Peterson, LT COL, USAF (BSC), Office of the Assistant Secretary of Defense (Health Affairs), Washington, DC. AH Mumm, COL, USAF (MC), R Mathis, MAJ, USAF (BSC), USAF School of Aerospace Medicine, Brooks AFB, Texas. PW Kelley, MAJ, USA (MC), Div of Preventive Medicine, Walter Reed Army Institute of Research, Washington, DC. SL White, MAJ, USA (MSC), Office of the US Army Surgeon General, Falls Church, Virginia. M Stek Jr, CAPT USN (MC), T Hickey, CDR, USN (MSC), Naval Medical Command, Washington, DC. F Garland, Naval Health Research Center, San Diego, California. GL Pulvermacher, MAJ, USAF (BSC), Defense Eligibility and Enrollment System (DEERS) and Central Systems Program Office. L Bigbee, Data Base and Systems Div, DEERS and Central Systems Program Office, Falls Church, Virginia. AIDS Program, Center for Infectious Diseases, CDC.

Editorial Note: This report summarizes the findings of the largest HIV-1 screening program in a defined population of U.S. citizens. The prevalence of 1.3 per 1,000 persons on active duty as of April 24, 1988, is lower than that found for the screening program overall, since antibody-positive persons were somewhat more likely than seronegative persons to be separated or retired after obtaining their test results.

The HIV-1-antibody seroprevalence in current active-duty military personnel probably underrepresents the seroprevalence in the civilian population for three reasons. First, homosexual men and male and female intravenous-drug users are underrepresented in military personnel. Second, persons with hemophilia are not medically eligible for military service. Third, seropositive military recruit applicants are denied enlistment; from October 1985 to April 24, 1988, 2,060 of 1,456,177 (1.4 per 1,000) recruit applicants were seropositive.

HIV-1 screening data from active-duty military personnel can be used for monitoring levels and trends of HIV-1 infection in the United States. These data augment those from other large screened populations, such as military recruit applicants, National Guard personnel, Job Corps entrants, and blood donors. Although each population source has its own limitations and biases, demographic patterns of HIV-1-antibody seroprevalence observed in active-duty military personnel followed patterns observed in other population-based and sentinel studies. For example, each of four groups—black and Hispanic military recruit applicants,[1,2] U.S. Army Reserve personnel,[3] blood donors,[2] and sentinel hospital patients[4]—were three to 12 times more likely than non-Hispanic whites to be HIV-1 seropositive. Similarly, men were at least three times as likely as women to be seropositive in these groups.[1-4] Age-specific HIV-1 seroprevalence peaked in active-duty military personnel in the 25-to 34-year age groups, a finding similar to that in military recruit applicants[1,2] and sentinel hospital patients.[4]

Continued monitoring of the active-duty military screening program will be important because all active-duty military personnel will be screened at least every one to two years for HIV antibody; therefore, the incidence of new HIV-1 infection can be measured directly. In September 1987, the observed incidence rate in 171,974 U.S. Army personnel was 0.74 new infections per 1,000 persons per year (5; JG McNeil, Walter Reed Army Institute of Research, personal communication). In comparison, for repeat blood donors to the American Red Cross—a very low risk population that is the only other large population for which incidence of HIV-1 infection can be directly measured—the observed incidence has remained stable at 0.03 new infections per 1,000 persons per year.[6] Neither military personnel nor blood donors are truly representative of the U.S. population; those at highest risk of HIV infection are to a varying extent excluded from both groups.

Data from active-duty military personnel will also provide information about the spectrum of morbidity from HIV-1 infection in this large, defined population. All identified seropositive active-duty military personnel receive a detailed medical evaluation and are staged by the Walter Reed (WR) classification.[7] Most HIV-1-seropositive persons have minimal or no symptoms. Of 650 seropositive active-duty personnel for whom data are available, 60% were asymptomatic (Walter Reed, stage 1 [WR-1]), and 18% had chronic lymphadenopathy without other evidence of immune dysfunction (WR-2).[8]

CDC will continue cooperating with the Department of Defense in monitoring levels and trends of HIV infection in active-duty military personnel and military recruit applicants. Surveys in other accessible populations at both low and increased risk of HIV infection are also under way.

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Influenza - United States, 1986-87 Season

THE 1986-87 influenza epidemic was caused by influenza A(H1N1) viruses resembling A/Taiwan/1/86(H1N1), a variant first isolated in China, Malaysia, Japan, and Singapore during January-April 1986.[1] The 1986-87 season was the third season during which influenza A(H1N1) strains predominated in the United States since this subtype reappeared in 1977.[2]

National data on influenza activity were obtained from four major sources:

1. *State morbidity reports.* Each week, state and territorial epidemiologists estimated the extent of influenza-like activity indicated by surveillance systems in their state or territory by using the following categories: no cases, sporadically occurring cases, regional outbreaks (occurring in counties collectively constituting <50% of the state's population), or widespread outbreaks (occurring in counties collectively constituting >50% of the state's population).
2. *Sentinel physician surveillance network.* CDC received weekly reports from 138 physician members of the American Academy of Family Physicians who recorded the number of patient visits for influenza-like illnesses. Reports were based on a clinical case definition, but some physicians submitted specimens to a central laboratory for diagnosis by rapid culture confirmation of influenza virus.[3]
3. *Mortality in 121 cities.* Death certificate data listing pneumonia or influenza (P&I) as a cause of death were reported from 121 cities weekly and analyzed to determine if the percentage of deaths attributed to P&I was higher than would be expected in the absence of an influenza epidemic. This index has historically reflected seasonal influenza-attributable mortality.[4]
4. *World Health Organization (WHO) collaborating laboratories.* Sixty-four WHO collaborating laboratories provided weekly reports of the number of respiratory specimens submitted for virus isolation and the number and types of influenza isolates identified. The WHO collaborating laboratories included state public health laboratories in 47 states and the District of Columbia as well as several county, city, and university laboratories.

In addition to the methods described above, CDC received reports from military laboratories and Veterans Administration hospitals and reports of outbreaks and unusual influenza cases from a variety of sources.

Most of the outbreaks reported to CDC during the 1986-87 seasons occurred among children and young adults. Only one nursing home outbreak was reported, suggesting that outbreaks among the elderly were uncommon.[5] This observation is consistent with other recent A(H1N1) epidemics. However, this was the first A(H1N1) epidemic since this subtype reappeared that was associated with excess P&I deaths reported through the 121 cities.

Sporadic cases of influenza A(H1N1) occurred in Hawaii in June and August 1986 but were not identified in the contiguous United States until late September.[6] The first reported U.S. outbreak occurred in October at a military facility in Florida.[7] Communitywide activity also involved other regions of the United States in late 1986. Sentinel physicians reported a peak in outpatient visits for influenza-like illness (Figure 1) from mid-December 1986 through January 1987. State epidemiologists in 42 states and the District of Columbia reported regional or widespread outbreaks, primarily in the northeast, west north central, mountain, and Pacific regions (Figure 1). Influenza activity reported by state epidemiologists also increased during December and peaked during January.

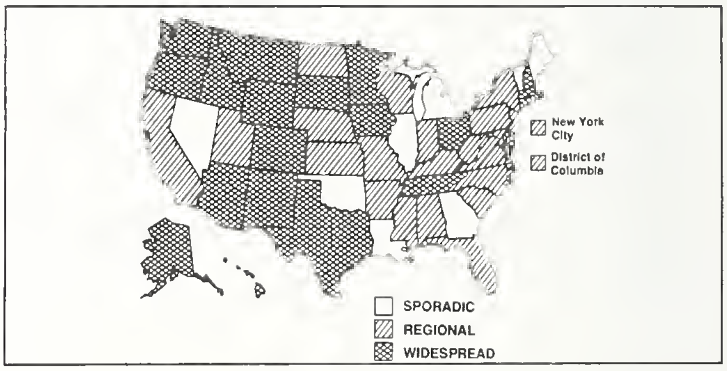

Figure 1

Maximum level of influenza outbreak activity reported by state - United States, September 26, 1986-May 2, 1987.

P&I deaths slightly exceeded the epidemic threshold for four weeks from mid-January to mid-February and again during the first two weeks of March 1987. Approximately 80% of these deaths occurred in persons 65 years of age or older.

Influenza A(H1N1) strains were reported from all 50 states and the District of Columbia. WHO collaborating laboratories in the United States reported 2,222 influenza virus isolates. Influenza A(H1N1) viruses accounted for 2,206 (99.3%) of the isolates. Sentinel physicians reported an additional 33 A(H1N1) isolates. Ninety-five percent of virus isolates from WHO collaborating laboratories were reported during a 13-week period between November 30, 1986, and February 28, 1987. Reports of virus isolation were most frequent from mid-December through January. Influenza type A(H3N2) and type B strains were rarely isolated.

Age group of patients was available for 1,918 A(H1N1) isolates reported by WHO collaborating laboratories. Of these isolates, 1,874 (97.7%) were obtained from persons under 65 years of age (Table 1). More detailed information regarding ages of patients with laboratory diagnoses

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Morbidity and Mortality Weekly Reports, Vol. 37, No. 31, 1988.

Table 1

Specimens tested and influenza type A(H1N1) viruses isolated by age group as reported to CDC by WHO collaborating laboratories - United States, October 1986-May 1987

*Age group**	*Specimens tested*		*Type A(H1N1)*		*Percent specimens*
(yrs)	*No.*	*(%)*	*No.*	*(%)*	*positive*
<20	10,495	(59.4)	941	(49.1)	9.0
20-64	6,178	(35.0)	933	(48.6)	15.1
>64	983	(5.6)	44	(2.3)	4.5
Total	**17,656**	**(100.0)**	**1,918**	**(100.0)**	**10.9**

*Age group was not specified for 4,408 (20.0%) specimens tested. Influenza isolates were recovered from 291 (6.6%) of these specimens; 288 (99.0%) of the isolates were influenza A(H1N1).

is available for 261 of the specimens submitted to the WHO Collaborating Center for Influenza (WHOCCI). Of these, 235 (90%) were obtained from persons less than 36 years of age.

WHOCCI did antigenic analysis on 315 influenza A(H1N1) isolates collected in 42 states. Most were closely related to the reference strain A/Taiwan/1/86(H1N1). Of the nine influenza A(H3N2) isolates submitted to WHOCCI for antigenic analysis, four resembled A/Leningrad/360/86(H3N2), a newly recognized mninor variant; the remaining five resembled previously identified strains. Four influenza B isolates were submitted for antigenic analysis; one resembled B/Ann Arbor/1/86, and the other was a related variant.

In contrast to most years, two influenza vaccines were manufactured for use during the 1986-87 season. The new A/Taiwan/1/86-like variants were detected relatively early, and viruses were submitted promptly from national influenza centers in Asia to the WHOCCIs in Atlanta and London; thus, July 1986 data supported the need to manufacture a monovalent A/Taiwan/1/86 vaccine.[8] This vaccine was specifically recommended for high-risk persons less than 35 years of age to supplement the standard trivalent influenza vaccine.[9] Approximately seven million doses of the monovalent vaccine were manufactured and distributed before the epidemic peaked in early 1987.

Reported by: Participating State and Territorial Epidemiologists and State Laboratory Directors. Sentinel Physicians of the American Academy of Family Physicians. WHO Collaborating Laboratories. Participating Veterans Administration Hospitals. Letterman Army Medical Center, San Francisco, California. Hackensack Hospital, Hackensack, New Jersey. Strong Memorial Hospital, Rochester, New York. Vanderbilt Univ, Nashville, Tennessee. Influenza Research Center, Baylor College of Medicine, Houston; 5th Army Medical Laboratory, For Sam Houston; USAF School of Aerospace Medicine, Epidemiology Div, Brooks AFB, Texas. Statistical Svcs Br, Div of Surveillance and Epidemiologic Studies, Epidemology Program Office; Div of Immunization, Center for Prevention Svcs; WHO Collaborating Center for Influenza, Influenza Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The 1986-87 influenza season illustrated the ability of a new strain of influenza to rapidly spread after appearing in Asia. In January 1986, influenza A(H1N1) variants related to A/Taiwan/1/86 first appeared in Northern China. During April and May, unusually high levels of epidemic activity were reported from Malaysia and Singapore. At the same time, similar viruses were isolated in Japan and Taiwan, where the 1985-86 winter epidemic was ending. Outbreaks were reported in some Pacific Island nations during June and July. In the United States, activity peaked rapidly during December and January and declined in February.

Despite the high transmissiblity of the new variant, countries such as Australia and New Zealand were virtually unaffected by the virus. Some of these countries had experienced severe epidemics of the previous A(H1N1) variant (related to A/Chile/1/83). This observation suggests that cross-protection from prior natural infection with the A/Chile-like viruses may have attenuated the spread of A/Taiwan-like viruses in some regions or countries. However, laboratory data suggest that inactivated A/Chile influenza vaccine showed poor cross-protection to A/Taiwan in one U.S. outbreak.[7,8]

Preliminary analysis of death certificates suggests that the A/Taiwan-like viruses may have been responsible for mortality during the winter. However, this finding contradicts the limited number of outbreaks reported in the elderly, the population generally at greatest risk in influenza epidemics. Analysis of hospital discharge diagnosis records and mortality data from the National Center for Health Statistics may clarify the impact of type A(H1N1) influenza in all age groups.

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View from the Hill

JAMES E. BRYAN

In 1985, Congress created the high-level Physician Payment Review Commission (PPRC). The PPRC's role was to advise lawmakers and the Secretary of Health and Human Services concerning the views of Medicare beneficiaries, physicians and others about current issues in Medicare reimbursement policies; to "conduct objective analyses," and eventually to formulate the basis for Congressional action to improve physician payment methods for Medicare services. Creation of the PPRC is said to reflect a growing recognition that the DRG approach to cost control for Medicare services is radically unsatisfactory in many respects and that it could be applied to professional services only with great difficulty.

The PPRC, chaired by Philip R. Lee, M.D., a former assistant secretary for health in HHS and current director of the University of California's Institute for Health Policy Studies, is comprised of 13 persons of considerable and varied distinctions in the area of health policy. The PPRC's combined talents reflect the depth of Congressional concern with the need to formulate and maintain policies in the Medicare payment system that will, as nearly as possible, earn the approval of both patient and physician.

The Senate Special Committee on Aging, under the chairmanship of John Melcher (D-Mont.), is now actively considering the second annual report of the PPRC. Copies of the hefty, 320-page document have been widely circulated to interested medical and citizen organizations by Senator Melcher with an invitation to "submit their comments for inclusion in our publication" (referring to the ultimate report of the Committee on Aging).

The PPRC's report is a masterpiece of research and analysis. Its prevalent theme is summarized in this "Overview" notation: "Like the Commission's first report, this one emphasizes reform of fee-for-service payment for physicians under the Medicare program, particularly through the implementation of a fee schedule," or a relative value scale (RVS). This concept has a fairly long history as a useful device. In the early phases of its current study, the PPRC studied five RVS plans, each of which has been in use for several years.

Since its first report in 1987, which focused on the conceptual basis of an RVS, the PPRC has considered whether payments should vary by specialty or by geographic area, and what weight should be given to historical and market factors. Presently, market factors are discounted as producing distorted charge patterns. The PPRC favors "basing a relative value scale primarily on resource costs." But it acknowledges that "charges are likely to play a role" and that "ways must be developed . . . to respond to considerations of beneficiary access to care."

The depth and earnestness of thought, as well as the imaginative research lavished on the critical need for an acceptable improvement of the DRG device or a practicable substitute for it, are impressive. However, much remains to be done.

Meanwhile, the "assignment" option remains a matter of urgent concern to the Health Care Financing Administration, the PPRC, the medical profession and especially to Medicare beneficiaries. There is widespread demand among Medicare beneficiaries, and organizations of the elderly and retired, for imposition of a requirement on all physicians to accept Medicare's "allowed charge" for a given service, and for abandoning or abolishing the "assignment option."

The PPRC expresses its "concern" about the financial liability of beneficiaries under Part B of Medicare, including liability under extra billing, "but acknowledges that it is "aware of the importance to physicians of Medicare's long-standing policy to give physicians a choice whether to accept assignment."

In this spirit, the PPRC is "examining evidence . . . and reviewing options . . . [to] improve current approaches and determine what policies would be appropriate to accompany a fee schedule." The executive summary reports that almost 75% of medical claims are now on assignment, yet extra billing on nonassigned claims totaled nearly $2.5 billion in 1987.

Other changes in Medicare policies and practices (eg, increasing incentives to physicians to accept assignment or to "participate" for a year's trial, helping beneficiaries find physicians who will forego extra billing, "constraining extra billing charges," etc.) have contributed to "large increases in overall assignment rates and the percentage of total services provided by the participating physicians."

Within the framework of current policy (ie, the policy to preserve the physicians' freedom to select or not select assignment—or, as some of them put it, "To make this decision myself") and absent emphatic pressures from those who advocate mandatory assignment, such a proposal

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JAMES E. BRYAN, Washington Correspondent, *American Family Physician.*

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seems unlikely to come from the PPRC. The draft report, however, speculates that "more-far-reaching reforms could be shaped by decisions on three policy issues: (1) the scope of services and the population to which concerns about extra billing should apply; (2) the relative importance of eliminating extra billing versus limiting it, and (3) the mix of policies between the use of financial incentives and the use of limits on extra billing."

For how long can the policy to preserve what many assume is an elementary civil right to set the price for one's professional service be sustained? Preservation of this policy is high problematic in the face of what is rapidly gaining a self-conscious sense of inevitability: an impressively broad-based national movement to formulate a coordinated all-American health care program. Ideally, such a program would allow the citizen, society and the physician to work together: first to build and preserve personal health; second to secure and protect a healthful human environment, and third to provide access and guidance for everyone in the use of modern medical skills and resources.

AROUND THE STATE

CSMS Geriatric Symposium

The Connecticut State Medical Society in cooperation with the Connecticut Academy of Family Physicians will sponsor a symposium on "Selected Topics in Nursing Home Care Issues" at the Ramada Inn in Meriden on Wednesday, 7 December 1988, from 8:00 A.M. to 1:00 P.M. The topics are intended to help increase the awareness of all health professionals of the specialized medical, nursing, and emotional needs of the elderly. It should be of special interest to physicians, social workers, and nurses. Dr. Andrew Weinberg, 144 North Main Street in Branford 06405 is in charge of the program. The fee is $25.00 and includes lunch.

OMAC Gets Permanent Address

Those who wish to contact the leadership of the Occupational Medicine Association of Connecticut (OMAC) can now do so using the CSMS address: 160 St. Ronan Street, New Haven, CT 06511, reports Ben Gordon, M.D., OMAC's President. The arrangement was approved by the CSMS Council in September.

Family Practitioners Meet

The Connecticut Academy of Family Physicians held its 37th Annual Scientific Symposium at the Parkview Hilton in Hartford on 26-27 October. Subjects ranged from pediatrics to geriatrics and 18 faculty members contributed to the program. Physicians, residents, students, and nurses attended this meeting.

Hartford County Hears Dr. Hsiao

William C. Hsiao, Ph.D., Professor of Economics and Health Policy at the Harvard School of Public Health addressed the members of the Hartford County Medical Association at the Farmington Marriott at their Semi-Annual Meeting on 27 September 1988. Professor Hsiao led the development of the Resource Based Relative Value Scale (RBRVS), an alternative physician payment system that may come to supplant the UCR-based Medicare fee schedule.

The meeting also featured a seminar on patient advocate programs, hospital certification, and future trends related to third party payors. Panelists included Henry M. Williams, M.D., Regional Medical Director of Health Care Management, Employee Benefits Division, at Aetna; John E. Donnelly, M.D., Medical Director of the Claims Department at Blue Cross & Blue Shield; and Rene Lerer, M.D., Medical Director of the Patient Advocate Program at the Travelers. Roger S. Beck, M.D., HCMA past president and CSMS President-elect, served as moderator of the program.

Lithotripsy Comes to Connecticut

The Yale-New Haven Hospital and the University of Connecticut John Dempsey Hospital have arranged to share a lithotripter, the first in Connecticut. The equipment is mounted on a 60-foot van and is scheduled to spend alternate weeks at each location. The lithotripter went into operation on 19 September.

Editorial

Illicit Drug Use, AIDS, and Public Policy

HIV infection is spreading rapidly in Connecticut among those who use illicit drugs and among their spouses and children. A massive public response is needed to contain the epidemic yet social, political, and financial obstacles block most of the public policy options—stopping the drug trade, immunizing our fellow citizens against using drugs, detoxifying and rehabilitating those who have become addicted, teaching people how to use drugs safely, or providing addicts with sterile injection equipment. Continuing current, largely passive, public policy will almost surely lead to the early death of the majority of those who use illicit drugs by injection and to the development of a major bridgehead of infection in the heterosexual "general population."

A number of public policy issues must be addressed, on an urgent time scale, in order to help to control the spread of HIV infection among those who inject illicit drugs, their spouses and sex partners, and their future children.

As of 30 June 1988, 165 adults and 11 children had been diagnosed with AIDS in the city of New Haven (1980 census population, 127,000). Of these, transmission was directly related to intravenous drug use in 55% of the adults and indirectly related (by heterosexual sexual contact) in about 11%. All 11 infants had been born to mothers who themselves used or had used drugs by injection or whose male partners did. Thus, taken together, 70% of persons with AIDS in New Haven probably experienced infection in relation to illicit drug use. (All surveillance data are from the Department of Health Services in Hartford.)

Women make up 27% of persons with AIDS in New Haven. Ninety-four percent of the New Haven women with AIDS experienced infection through their own drug use or by sexual exposure to their male partners.

The numerical picture of AIDS in the other major cities of Connecticut, including Bridgeport and Hartford, is not greatly different. In the state as a whole, including of course suburban and rural areas, direct illicit drug use accounts for the infection in about 49% of adults with AIDS and indirect heterosexual transmission accounts for another 6%. Infants from this setting number 28 of the 29 who have been diagnosed with AIDS.

In Connecticut, and particularly in the urban centers of the state, the AIDS epidemic is on the verge of engulfing these vulnerable populations—illicit drug users, their spouses and sex partners, and their infants.

In New Haven, 79% of all persons with AIDS are minority persons. In Connecticut, 54% of AIDS patients are minority persons. As is well known, many minority persons living in the inner cities of our state are poor and have relatively little access to health care, independently of AIDS.

A massive public policy response is needed. Ideally, I believe, we should move to interdict the drug trade (presumably throughout the nation since no one could seriously think that drugs could be stopped at state or local borders). We could invest in determining, by research and by program implementation and evaluation, what makes people vulnerable to drug use and how we may help them resist. We do not currently have the national will to stop the drug trade. That must be obvious to every observant citizen. At best, failed methods are being revived and revised and they will fail again. We do not have the knowledge or the commitment to find out how to protect people from drug use. We seemingly accept the feeble showcase of telling our youngsters to say "no."

A wide variety of drug rehabilitation programs have been developed, including residential detoxification and methadone maintenance models, generally with strong counseling components. Treatment can be costly; success depends substantially not only on the clients' motivation and personal life setting but on the particular illicit drug concerned and the quality of the given program. Currently the programs in our state are understaffed, underdeveloped in terms of physical plant, and overwhelmed by their clients' needs and by the consequences of having long waiting lists. Typically a newly referred client must wait for months before his care can begin. There are three intertwined problems to be addressed before we can maximize saving lives and health by utilizing rehabilitation programs. We must find the funding to increase the number and mix of programs—particularly to address those who use drugs by injection—usually heroin, cocaine, or amphetamines. We may need a tenfold increase in client capacity. Currently no one has developed a convincing method of counting the potential clients at risk. Our citizens must also allow these programs to expand and serve clients in all of the appropriate neighborhoods. Current experience tells us that resistance and hostility will be formidable. We must then expand the referral and follow-up networks that will allow us to move people into treatment and identify those who need additional subsequent care. We must also find the people in need and help to motivate them to seek treatment. Some unknown proportion of drug users are deeply alienated and distrusting of the public's concern. They are not seeking care. They do not want it.

Editorials are expressions of personal opinion and do not necessarily reflect the policies of CSMS.

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Bringing them into treatment will require newly developed outreach modes.

Finally, many minority community spokespersons and opinion leaders do not believe that the current mix of programs is appropriate or sincere. We need objective evaluation of the goals and objectives of various programs, their success rate and cost, how to score "success," and how best they can be matched to potential clients in need.

Physical plants must be organized or developed, personnel at all levels must be recruited and trained, and supportive outreach and follow-up programs invented. Were we promptly to move to quadruple our services, we might well face at least a two- or three-year start-up time. Even that may not be possible. Capital funding and adequate reimbursement sources are not in hand.

Transmission of HIV in these populations is by shared and uncleansed injection equipment or by unprotected vaginal intercourse. We could stop or halt the epidemic by teaching people how to clean their injection equipment and how to practice "safer" sex *while* we were developing and implementing drug rehabilitation programs, motivating vulnerable persons to seek such care when it became available, and counseling vulnerable people not to become irreversibly alienated when they sought care but were rejected. Society, in general, expresses a great deal of hostility or, at best, indifference to the welfare of those who use illicit drugs. Largely we wish to distance ourselves. They reciprocate those feelings. We have pronounced some drug use to be both illegal and immoral. That makes it very difficult for us to implement and fund programs that teach people how to use their drugs safely even though that would save their lives and health, and would greatly reduce the potential spread of infection to others. To reach, to inform, and to motivate people to use drugs safely until we can help them in more definitive ways will require substantial public support and commitment.

In order to provide safer sex advice that will be effective we need much greater knowledge of sexual taboos in different cultural settings and we need public consent to the promotion of nonreproductive sexual expression.

In Connecticut, it is illegal to possess injection equipment without a prescription and it is illegal for a health care provider to prescribe injection equipmment for illicit drug use. Thus we mandate a needle and syringe shortage that greatly encourages those who use drugs by injection to share. They share not only their needles and syringes but their blood borne viruses as well. These include HIV and hepatitis B. We could evaluate the costs and benefits of our current laws and we could estimate the costs and benefits of some less restrictive regulation of access to injection equipment. If, indeed, vulnerable people could be allowed access to personal and noninfectious needles and syringes, they would remain well themselves and would not put their sex partners at risk. The public is deeply reluctant to open a dialogue on this matter.

Thus, we have failed to interdict the drug trade. It is flourishing possibly as never before. We do not know how to immunize our youth from experimenting with drugs. Our drug rehabilitation programs are woefully inadequate to care for the potential clients in need and are not very successful in caring for those who are accommodated. Teaching people how to use drugs and how to have sex safely is considered objectionable or even immoral and illegal, seemingly by the bulk of our society. Stopping HIV transmission by providing addicts with personal noninfectious needles and syringes is seen as too radical even to enjoy a reasonable dialogue. I hope to address each of these alternatives in subsequent editorials.

Currently public policy apparently requires that those who use illicit drugs by injection, their sex partners, and their infants must die. Some have called this genocide. At the very least it is a policy of passive extermination.

Author's Note: My experience has been that almost everyone has strongly developed views about those who use illicit drugs, about social aspects of the AIDS epidemic, and about appropriate policy concerning the convergence of these two realms. I would greatly appreciate hearing from readers, for my own enlightenment and for the Mayor's Task Force on AIDS, in helping to develop policy in our state and in New Haven. In many ways, New Haven may represent a manageable microcosm for the developmment of effective health promotion policy. Equivalent problems will almost surely arise in every American city. Please share your views, either with me or with *Connecticut Medicine.*

Alvin Novick, M.D.

Professor, Department of Biology,
Yale University; Chairman,
Mayor's Task Force on AIDS, New Haven

The President's Page

Universal Health Care

In last year's legislative session a bill providing for "universal health care" in Connecticut was raised but died in Committee. However, a legislative task force on this issue has been formed further to investigate its possibilities. With the recent passage of such a law in Massachusetts, there will be greater impetus to enact similar legislation in Connecticut. Organized medicine must therefore decide how to respond to this issue of providing public health care insurance to those presently uninsured: the unemployed, the working poor, and the uninsurable.

From both a social and a medical standpoint, providing health care for the whole population is an admirable goal. In this regard, organized medicine should always be the patients' advocate. Most physicians do care for the indigent, the working poor without insurance, and the high risk patient who has trouble obtaining insurance, without regard to full compensation. These services have been variable and unreliable at times, however, with some falling "between the cracks" in such an informal system. Once in the "pipeline," however, few if any are denied necessary care. Nevertheless, a more reliable method of caring for all is obviously a better solution to this long-standing problem.

Massachusetts' new mandatory insurance program is funded mainly by employer surcharges of 12% of wages up to $1,680 per employee. Employers of five or fewer employees are exempt from the surcharge. There is also a state subsidization for those very low paid employees whose surcharge would be below the average. Finally, the uninsured employees themselves will be required to pay for their insurance on a sliding scale averaging 25% to 30% of its cost. At present, the state's fiscal distress has caused Massachusetts' Governor Michael Dukakis to cut back start-up funding for the new program from $8.5 million to $1 million. Nevertheless, he was reported in late September to be proposing a similar plan nationwide in his presidential campaigning.

If such a bill were to pass in Connecticut, we are certainly prepared to provide such care to the estimated 258,000 persons in this category. My concerns are whether universal health care will lead to further intrusion by third parties into the physician-patient relationship. Government and big business have already made deep incursions into how we practice medicine. If inadequacies in funding such a program undermine access and quality of care for its covered insureds so that economic rather than professional standards prevail, no one will be happy. If it leads to a tiered system of health care, no one will be happy. I don't believe there are any Americans who want to be put on a waiting list for a cholecystectomy or a total hip replacement.

Ultimately I see universal health care passing or being defeated as it has for the past 40 years, based on whether society perceives itself as being able to afford it. Senator Kennedy's initiatives at the Federal level have failed because no one had a handle on the cost of universal health care. Taxpayers still show no willingness to pick up the tab for a public system. Government in Connecticut at the moment is in tight economic straits. I believe the climate for as expensive a project as this may have to wait for a more propitious period of prosperity, or an innovative way of funding the program without significantly raising the price of such things as a "Big Mac" or a movie.

We can certainly learn a lesson from 1964 when organized medicine opposed the passage of the Medicare Act. That was something to be lived down only with great difficulty, even though the AMA had proposed a sound, responsible alternative. I believe we should be prepared to support the concept of Universal Health Care if it is a well-structured program. It should give those involved equal access to the health care system. It should not be a budget-buster or help fuel another inflationary spiral. I'm most interested to see what develops, and to see that medicine takes a hand in that development.

Norman A. Zlotsky, M.D.
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Reflections on Medicine

So Little Time

ROBERT U. MASSEY, M.D.

A young internist told me recently that unless he saw 25 to 30 patients in his office each day he could not pay his expenses and make a reasonable income for his family. I calculated that he must spend no more than 10 to 15 minutes with each patient.

I recall working that fast when I took sick call during my army days, but my patients were mostly young, healthy males with straight-forward complaints; ten minutes was usually enough, and if aspirin or reassurance failed, they would be back the next day. For the worried, middle-aged patient, the depressed eighty-year-old, the anxious teenager, a ten-minute visit must seem like a very long run for a short slide.

Several months ago a patient whom I had not seen in 25 years called from New Mexico just to say "hello." I knew better, so we talked for 30 or 40 minutes, trying to get around to what she really was calling about. Since I had last seen her she had been partially disabled by what she understood to be cerebellar degeneration; her neurologist said he could do nothing for her and her internist passed off her increasing abdominal discomfort and bowel symptoms as part of the disease. When we finished the long-distance phone call she said that just talking had made her feel better, and would I mind if she called again sometime? No one had listened much to her, she said, especially since she was now 70 years old and in a wheel chair.

Fortunately I was able to do more than just listen, although that was what had been important to her; I arranged an appointment at the Mayo Clinic, which is where she felt secure in going. Later through telephone calls and letters from the Clinic I learned that she had had a partial resection and colostomy, and now seemed to be doing well.

After she returned home she called to thank me and to say that she now has two places to call when she needs to talk about her medical problems—Connecticut and Minnesota!

Homeopathy was one of the most successful of the nineteenth-century medical sects, and it appealed especially to the better educated urban upper classes. Part of its attraction almost certainly lay in its avoidance of purging and bleeding but more in the care with which homeopathic physicians elicited their clinical histories. Since the choice of the diluted drugs to be used in treatment depended entirely upon the patient's symptoms, successful therapy rested upon a painstaking review of the clinical history. That took time, and time to spend talking with the doctor was what most patients wanted and needed.

The homeopathic armamentarium of drugs had little pharmacologic effect; today's stimulants and depressants, more widely used by far than the "morbific agents" in Hahnemann's "Organon," have baneful effects if improperly prescribed; an accurate history is essential to avoid doing more harm than good. Of equal importance, it takes time for friendship and trust to grow. A wise lawyer once reminded our medical students, "Good friends don't sue friends." More important, mutual respect and trust are the very substance of the patient-doctor relationship that we talk so much about but so often fail to have time for; how should we when we must measure out time with coffee spoons?

More and more patients see hospitals as big businesses and doctors as entrepreneurs; big business, behaving efficiently, nearly always becomes bureaucratic, impersonal, and unpleasant. The "health-care organization" almost certainly will have put the patient in her place by the time she gets to the physician. His first work is to undo the mounting anger and fear, to listen, to reassure, to build trust, to persuade the patient that, contrary to all her impressions, their relationship will be professional, not commercial.

I recall a fine clinical teacher assuring a medical student that he should not worry that he had not gotten a satisfactory story of his patient's illness during his hour-long interview; "Come back tomorrow; the patient will know you better, and, anyway, most clinical histories take time to develop." No worthwhile story is ever told in a hurry.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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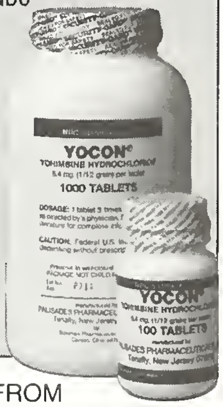

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MISTRANSLATIONS AND ABSOLUTES

To the Editor: I have enjoyed your "Reflections" page in *Connecticut Medicine* for many years. Your recent article, "The Obstetrics of the Soul" however, while quite interesting, relies in part on a habit which is common in Western religious thought over the past two millenia—the use of mistranslation, accidental or otherwise, to "prove" a religious, ethical, or moral "doctrine" by use of ancient text, written in another language at another time and passed down through the ages in two forms; the original which few can (or bother to) read, and translations—often passing through several different languages before reaching their current level of "usefulness."

I am referring to your statement, "The sixth commandment is unambiguous . . . ." You are correct in that, sir, but you are on the wrong side of the unambiguity! The (original) Hebrew text, transliterated, is "Lo tirzach," which translates literally as "Don't *murder*." The Book of Common Prayer, in this instance, is correct! The Pentateuch, which forms the core of Jewish Law, is replete with examples of sanctioned killing, which is carefully distinguished from murder. Not too far beyond the story of the giving of the Ten Commandments in the Bible, there is a story of the Israelites going through a great famine. Several men set out on a hunt on the Sabbath and bring back fresh meat to the tribes. Moses himself declares the meat to be unkosher (unfit for consumption) and orders the well-meaning hunters *executed* for their violation of the laws concerning the Sabbath. Elsewhere in Pentateuch, crimes which received the death penalty are enumerated, along with their specific methods of execution—stoning, strangling, drowning, and beheading.

Other areas of Pentateuch also look upon killing prohibitions as less than absolute. Considerable time is given to the discussion of the Manslayer (accidental killer), whose sentence is exile to a City of Sanctuary (where he himself may not be harmed), with a length of sentence lasting only as long as the life of the High Priest reigning at the time of his sentencing. The story of the Rodeph (pursuer) is even more enlightening. He who kills someone "in hot pursuit" commits, under Mosaic Law, no crime. Other examples abound but the point I am making, of course, is that the very question that you address in your article—essentially the difference between killing, murder, or to use modern euphemisms, "helping to a dignified death," etc., was *far* from settled by my ancestors some 3,200 years ago—they wrestled with the very same questions that we continue to wrestle with today. They certainly did not have an "unambiguous" answer—and it will be a very sad day for our society when we become arrogant enough to legislate one answer for all situations and then say "there-that's done, let's not worry about it any more."

As a practicing obstetrician, I cannot help but comment on one other "absolute" passed down through (mis)translation. *My* copy of the Hippocratic Oath—I am blessed by a total ignorance of Greek—states: "Neither shall you give a pessary to induce abortion." Since I have the luxury of using a translation, I have always interpreted that as a prohibition against supplying a patient with an instrument with which she could instrument *herself*, ie, a "coathanger" abortion. Others have interpreted this phrase as forbidding intrauterine manipulation by patient or doctor. Most people, however, recognize the "legitimacy" of what has become known as "The Hippocratic Abortion"—a violent fall, or blow to the lower abdomen, even though it may not be particularly effective.

The point is, of course, that our ancestors passed on to us very few "absolutes" or "unambiguities." Most absolutes that we recognize we do so for sectarian reasons as part of a process that allows us to transmute the historical record into legend, then myth, then finally into religious "belief" and cultic practices. Our real gift from our ancestors is the imperative to think about and debate these issues, and to recognize that they are important questions that must be aired, discussed, and, yes, worried about and not just sloughed off. Your articles contribute wonderfully to this process, and I look forward to many more years of your writings.

Stephen R. Katz, M.D.

Fairfield, CT

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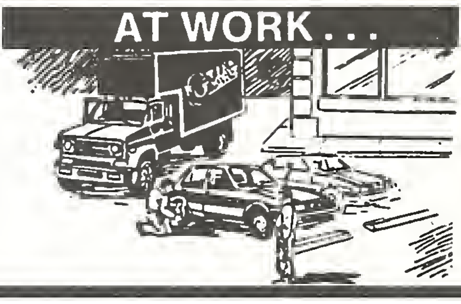

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BOOK REVIEW

American Health Care: Realities, Rights, and Reforms

By Charles J. Dougherty, Ph.D., New York, NY, Oxford University Press. 1988. x + 227 pp., $29.95 (cloth); $14.95 (paper)

In the 21 July 1988 issue of *The New England Journal of Medicine,* it has been reported that the Joint Ways and Means Committee of the Oregon legislature has made a compromise in the form of an allocation decision "engendered by limited resources" in favor of providing, with the same projected revenues, improved access to basic health care for approximately 1500 low-income children and pregnant women instead of providing organ transplant coverage for approximately 34 patients, since the financial resources to provide *all* that is needed will be unavailable. The message sent from Oregon, that "budgetary constraints are real and they apply to health care" is clearly expressed in the Governor's words: "We all hate it, but we can't walk away from this issue any more. It goes way beyond transplants. How can we spend every nickel in support of a few people when thousands never see a doctor or eat a decent meal" (p. 171). In short, some therapies must be foregone.

Although most Americans (including a number of physicians) who speak and write about "rationing health care resources" in truth do not take rationing seriously — they tend to think (fantasize?) that the necessary and needed dollars will somehow eventually appear from somewhere, perhaps from their fictitious assessment of the real GNP — the recent "Oregon decision" clearly demonstrates that such political naivete and lip service to the need for rationing is beginning to be replaced by a more rigorous assessment of economic reality and the need to take rationing of health care resources more seriously. I say "more seriously" because in the technical vocabulary of economists virtually all distributions of goods and services are forms of rationing — even when scarcity is unproblematic. But *serious* rationing occurs not only when goods and services become scarce or access to them is limited, but when a large number of citizens are compelled to suffer unfortunate, if not always unfair, consequences, such as pain, suffering, disability, and even death.

The appearance of *American Health Care* seems therefore quite timely, since its author, Charles J. Dougherty (a philosopher and newly-appointed Director of the Center for Health Policy and Ethics at Creighton University in Omaha, Nebraska) has paid special attention to the publications of a plethora of philosophers who have written on the concepts of 'rights,' 'entitlement,' 'liberty,' 'justice,' 'just allocation of resources,' and various ethico-political theories like rule utilitarianism (a form of consequentialism), egalitarianism, libertarianism, contractarianism, and political "pluralism," by which, departing from common usage, he means the defense of the claim that there is a moral right to health care by appeal to the "several theories" noticed above, as long as "insights and arguments from each theory...are not mutually contradictory" (p. 120).

American Health Care is structured in ten chapters divided into three sections which reflect the subtitle of the book: "Realities" is a single introductory chapter which sets forth the critical predicament of our contemporary health care system — the problem of access to and quality of care as well as the vexatious and nagging problem of the continuing rising expenditures for health care, where *expenditures* are determined by the product of recently controlled *costs* and increasing (but uncontrolled) *volume*. "Rights" is composed of six chapters that explore concepts like 'right to health care,' ' a moral right to health care,' and the ethico-political theories mentioned above. "Reforms" contains three chapters which review certain market reforms, various modes of prospective payment (including vouchers), and finally an exploration of various national health care plans — Medicaid, Medicare, national health insurance schemes, and a national health service like Great Britain's. The author provides a concluding section of ten pages, and has added a comprehensive though selective nine-page bibliography as well as an index.

Professor Dougherty's purpose in his three-part study is clearly expressed in his "Preface" (p. vii) and again in his "Conclusion": (1) "an empirical investigation of the performance of the present American health care system," (2) "a conceptual exploration and defense of the concept of a moral right to health care," and (3) "an examination of alternatives for reform of the system" (p.181). Although lucidly written for consideration by physicians and others concerned with the status of the U.S. health care system (systems?), Dougherty is frequently uncritical when he tiptoes into philosophical waters above his waist. For example, in the description of his purposes, what are we to understand by his phrase a "defense of the concept of a moral right to health care"? Philosophers, even those who do not pledge allegiance to the analytical school, do not take themselves to be "defending concepts," but by analysis and argument perhaps to clarify them; theses, on the other hand, are defended or refuted. Perhaps this was a slip of the computer keyboard or even a Freudian parapraxis: Does Dougherty tend to protest, polemicize, and proselytize (but not argue) too much on behalf of the disenfranchised — "defend" (absent sound argument) all Americans' *moral* right to health care?

Here, I suspect, we are at the center of the book's soft and vulnerable underbelly: For it is one thing clearly to articulate, as Dougherty does, the empirical conditions which reveal the social and health problems that exist in the U.S. due to limited access to dollars, health insurance premiums, and health care itself (not to mention housing, employment, and education) [Part I], it is quite another matter to provide sound and convincing arguments that entail the conclusion that we *all* have a *moral right* to health care. Again, it is one thing to review and even advocate plausible tactics and programs to reform health policy in the U.S., as Dougherty does, in order to meliorate the serious matter of limited access to health care by far too many of our nation's citizens [Part III], but it is quite another to establish these new policies, programs, and reforms on the basis of the claim that all citizens have a moral right to health care [Part II], which Dougherty does not demonstrate. In short, the argument of Part II — notwithstanding appeal to ''several theories'' and even ethical ''pluralism'' (and perhaps precisely because of this appeal) — fails to allow the conclusion that we all have a moral right to health care. The principal reason for this failed line of argument begins with the author's assertion that ''Rights and duties, with some exceptions, are correlative: rights entail duties and vice versa" (p. 26). Here Dougherty too loosely cites Joel Feinberg's work, but fails to appreciate that health care (ie, access to and provision of health care) is precisely a legitimate candidate for the class of ''exceptions.'' That is, rights and their ''corresponding'' duties are frequently asymmetrical. In the case before us, then, although it is true that a moral right to health care, if such could be shown, would entail a moral duty to provide it, a moral duty to provide health care, if it could be demonstrated, would not entail the inference that anyone (indeed, everyone) had a moral right to health care. Dougherty's principal effort, to prove that there is a moral right to health care and that therefore our society has a moral duty to provide it, is undermined by his inability to demonstrate the ground for *entitlements* which are required to support the claim to a moral right to health care. But even more serious is the fact that the author actually grounds his claim that we have a moral right to health care on the *prima facie* duty to provide access to and provision of health care (the asymmetry I have noted). Although Dougherty appeals to this duty as founded in intuition, he actually modifies his argument at a critical moment and therefore does not demonstrate that there is a moral right to health care at all. He remarks: ''...the duty to aid in health care contexts is best articulated as a moral right of access to basic health care'' (p. 185); here it is clear that the move is from duties to rights and *not* rights to duties. In conclusion, Dougherty actually ''argues'' *from* the intuition (perhaps even a sound intuition) that there is a *moral duty* to provide health care *to* the claim that we have a *moral right* to it. It is here that we encounter the asymmetry noted above between rights and duties: It does not follow from the existence of a moral duty to provide health care that anyone (and therefore surely not everyone) has a moral right to it, whether that means the provision of a decent basic level of ''primary'' health care, including ''prenatal and pediatric care, and some geriatric and preventive care,'' or ''extensive curative health care and high-technology, very expensive care'' (p. 189).

Notwithstanding Dougherty's failed argument (and who, after all, has ever succeeded?), he has surely forced his readers to confront the matter of the meaning of a self-imposed duty on the part of all citizens in a good commonwealth to work together toward providing maximum access to and the provision of a decent basic level of health care for *all* citizens, irrespective of their racial origins, formal education, and especially their financial circumstances. It may well be, after all is argued out, that a good society acts principally from the standpoint of self-imposed duties, one toward all, in order that, in the end, all citizens have access not only to health care but to other equally compelling life necessities by means of a broad social movement driven by solidarity.

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From the Executive Director's Office

CALL
SEMI-ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1988 Semi-Annual Meeting of the House of Delegates will be held at the Ramada Inn, 201 Washington Avenue, North Haven. The meeting will commence at 10:00 A.M. on Thursday, November 17, and will continue until all business has been concluded.

9:30 Registration and Continental Breakfast
10:00 Call to Order

Norman A. Zlotsky, M.D., President
Kenneth M. Robbins, M.D., Speaker of the House
Katherine C. Ill, M.D., Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society provides that:

Resolutions may be introduced by any Active, Life Member, Student Member or Postgraduate Physician Member of The Society, in compliance with the following provisions.

a. All resolutions, reports and similar items of business submitted in writing and received at the office of the Executive Director not later than thirty days before the date scheduled for that meeting shall be considered as regular business of the House of Delegates.

b. Component county associations or the Student Member or Postgraduate Physician Member Associations whose meeetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports, and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.

c. Reports, recommendations, resolutions, or other new business may be presented to the House of Delegates by the Council of The Society at any time and shall be considered as regular business.

d. Any business which does not qualify as regular business in accordance with the foregoing provisions may be accepted for consideration by a majority vote of the delegates present and shall be referred at once by the Speaker to a reference committee. When business is introduced under the provisions of this paragraph the vote shall be taken without debate, except that the introducer shall be allowed not more than two minutes to explain why it should be considered as regular business.

PROPOSED AMENDMENT TO THE BYLAWS

The following proposed amendments to the Bylaws were presented to the House of Delegates on May 4, 1988 and tabled for consideration and action at the next regular meeting of the House of Delegates.

In accordance with the Bylaws, these amendments are being published in *Connecticut Medicine* "on one or more occasions prior to the next meeting—at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates."

SUBJECT: QUORUM

PURPOSE: To reduce the size of the quorum

RECOMMENDATION: Replace Section 11, Article V - HOUSE OF DELEGATES, with the following amendment:

Article V - House of Delegates
Section 11 - QUORUM (Change in Capitals)

A quorum, TO CALL TO ORDER, any meeting of the House of Delegates shall consist of a majority of the sum of the number of delegates eligible to vote in the House. ONCE THE MEETING HAS BEEN CALLED TO ORDER, A QUORUM SHALL CONSIST OF FIFTY PERCENT OF THE TOTAL DELEGATES REGISTERED.

SUBJECT: HOSPITAL MEDICAL STAFF SECTION

PURPOSE: Establishing a CSMS Hospital Medical Staff Section (Additonal words in capital letters and bold)

Article V - House of Delegates
Section 2 - Composition

The House of Delegates shall be composed of: (a) delegates elected by the component association according to the apportionment provided in Section 4 of Article V of these Bylaws; (b) those members of the Council who are eligible to vote in the Council; (c) all past presidents of The Society and such other members of the Society in good standing as may be approved by the House of Delegates, from time to time, who shall be ex officio members of the House of Delegates without the privilege of voting; (d) delegates elected by the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** according to the apportionment provided in Article V, Section 4 of these Bylaws.

Section 4 - Apportionment, Par. 2

The number of delegates from the Student Members shall be one delegate and one alternate from each medical school in the state. The Postgraduate Physician Members shall be entitled to send from their constituent membership to the House of Delegates each year one delegate for every seventy, or fraction thereof, of the number of members as recorded in the office of the Executive Director of the Society on December 31 of the immediately preceding year. **THE CSMS HOSPITAL MEDICAL STAFF SECTION SHALL BE ENTITLED TO SEND ONE DELEGATE AND ONE ALTERNATE.**

Section 5, Registration, Par. 1

Before every session of the House of Delegates, the Student Members and Postgraduate Physician Members and **THE HOSPITAL MEDICAL STAFF SECTION** shall deposit with the Secretary of the Society a certificate or list signed by the president, secretary, or duly authorized representative of the Student Members and the Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION,** respectively, or the Executive Director of the Society, listing those members entitled to be seated in the House of Delegates.

Section 5, Registration, Par. 3

When an elected delegate or the elected alternate from the Student Members or Postgraduate Physician Members **OR THE HOSPITAL MEDICAL STAFF SECTION** is unable to attend a specified session, the Student Members and Postgraduate Physician Members **AND THE HOSPITAL MEDICAL STAFF SECTION** may appoint a substitute delegate and alternate delegate.

Section 12, Procedure, Par. 3(b)

Component county associations or the Student Member or Postgraduate Physician Member associations **OR THE HOSPITAL MEDICAL STAFF SECTION** whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.

Article XV - Associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS**

Section 1. Definition

The Council shall sanction associations of Student Members and Postgraduate Physician Members **AND HOSPITAL MEDICAL STAFFS.** These Associations shall meet between forty-five and sixty days prior to the annual meeting of the House of Delegates of the Society for the purpose of election of officers and delegates to the Society and at such other times as they deem necessary.

Section 2. Bylaws —

The Student Member and Postgraduate Physician Member **AND HOSPITAL MEDICAL STAFF** associations shall have the power to adopt bylaws that are not in conflict with the bylaws of the Society. In the event of an existing or apparent conflict, the Bylaws of the society shall take precedence.

MARK YOUR CALENDER

197TH ANNUAL MEETING
CONNECTICUT STATE MEDICAL SOCIETY
MAY 10, 11, 1989
RAMADA INN, MERIDEN, CONNECTICUT

MAY 10 — ANNUAL MEETING OF THE HOUSE DELEGATES
MAY 11 — GENERAL SCIENTIFIC PROGRAM
CSMS SECTION MEETINGS

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

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Seeking BC/BE internist, 20-30 hr/week, to join female internists' well-established practice. Limited call. Modern, spacious office. Plese send CV to Rozann Venti, M.D., 269 Church St., Hebron, CT 06231.

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A dynamic private practice group of internist and pediatricians is seeking a qualified internist, BE/BC. The practice is associated with a Yale-affiliated hospital and provides house staff ambulatory internal medicine teaching in office. An excellent career opportunity for those interested in a progressive, innovative private practice. Please submit a CV and inquiries to: Dr. C. Edward Leach, Pediatric & Medical Associates, Suite 164, 330 Orchard St., New Haven, CT 06511.

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The State of Connecticut needs assistant Medical Examiners. They are physicians licensed to practice medicine in Connecticut, who serve as primary investigators of deaths coming under the jurisdiction of the Medical Examiners Office. Cases investigated (fatalities resulting from injury, drug abuse, and medically unattended deaths) are reported directly to the Farmington office. Case consultation with a staff forensic pathologist is available on a 24 hour basis. Compensation is $50 per case investigated, plus mileage and expenses. Physicians in group practice could serve as Medical Examiners on a rotational basis. Please contact James L. Luke, M.D., Chief Medical Examiner, 679-3980, for further information.

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DERMATOLOGY

June '89. Age 33. Licensed in Connecticut. Nat'l bds. AB cert. (Ped); AB elig. (Derm). MD, Duke University School of Medicine, Durham, NC; Int. and Res., Children's Hospital of Philadelphia, Philadelphia, PA and Albert Einstein, New York, NY. Prefers solo, group, or associate type practice in a medium-sized community. Write Diane M. Davidson, M.D., 18A Hollow Wood La., Greenwich, CT 06830.

July '89. Age 28. Nat'l bds. AB elig. MD, Dartmouth Medical School, Hanover, NH; Int., Cornell-New York Hospital, NY; Columbia-Presbyterian Medical Center, NY; Fellowship, St. Lukes-Roosevelt Hospital, NY. Prefers solo, group or associate type practice. Write Jonathan L. Held, M.D., Apt. B, 45 East End Ave., New York, NY 10028.

GENERAL PRACTICE

Sept. '88. Age 58. Licensed in Connecticut. MD, MeHarry Medical School, Nashville, TN; Int. and Res., Kings City Hospital, Brooklyn, NY. Prefers institutional or industrial type practice in a medium to large-sized community. Write, CSMS, BR/GP.

GENERAL SURGERY

Nov. '88. Age 31. Licensed in Connecticut. Nat'l bds. AB elig. MD., Loma Linda University School of Medicine, Los Angeles, CA; Int. and Res., Loma Linda University Medical Center. Prefers group associate or institutional type practice. Write, Karen Ulloth, M.D., 43 Front St., New Haven, CT 06513.

INTERNAL MEDICINE

July '89. Age 34. Nat'l bds. AB cert. MD, University of Michigan, Ann Arbor, MI; Int. and Res., Yale New Haven Hospital and The Hospital of St. Raphael, New Haven, CT; Fellowship, NY Medical College, Valhalla, NY. Prefers group or institutional type practice. Write CSMS, CM/IM.

July '89. Age 28. Licensed in Connecticut. Nat'l bds. FLEX. AB elig. MD, St. George's University, Granada; Int. and Res., Mt. Sinai Hospital, Hartford, CT. Prefers group type practice. Write, Jeffrey H. Katz, M.D., 7 Cypress Trail, Farmington, CT 06032

Aug. '89. Age 32. Presently in practice. Nat'l bds. AB cert. MD, New Jersey Medical School, Newark, NJ; Int. and Res., University of Wisconsin Hospital, Madison, WS. Prefers solo, group or associate type practice in a small to medium-sized community. Write, Gregory Neilley, M.D., 81 Charles St., Annapolis, MD 21401.

Pulmonary. July '89. Age 34. Nat'l bds. AB cert. MD, University of Virginia, Charlottesville, VA; Int., University of Alabama Birmingham, Birmingham, AL; Res., University of Virginia; Fellowship, University of Rochester Medical Center, Rochester, NY. Prefers group practice in a small to medium-sized community. Write, Lee Monroe Due, II, M.D., 8 Kenicott Circle, Fairport, NY 14450.

OBSTETRICS & GYNECOLOGY

Aug. '89. Age 33. Licensed in Connecticut. Presently in practice. Nat'l bds. AB cert. MD, Georgetown University, Washington, DC; Int. and Res., Wilford Hall USAF Medical Center, Lackland Air Force Base, San Antonio, TX. Prefers general OB/GYN group practice in a medium to large-sized community. Write, Clare F. Ventre, M.D., 5901 Mt. Eagle Dr., #1016, Alexandria, VA 22303.

July '89. Age 35. Nat'l bds. AB elig. MD, Harvard Medical School, Boston, MA; Int. and Res., NY University/Bellevue Medical Center, New York, NY. Prefers a group type practice in a medium-sized community. Write CSMS, c/o LS/OB.

RADIOLOGY

Jul. '89. *Diagnostic Radiology.* Age 33. Nat'l bds. AB elig. MD, George Washington University, Washington, DC; Int. and Res., Medical Center of Deleware, Newark, DE. Prefers group, associate, or institutional type practice in a medium to large-sized community. Write, Joseph M. Ullman, M.D., Apt. I, 148 Chestnut Crossing Dr., Newark, DE 19713.

July '79. *Neuroradiology.* Age 33. Nat'l bds. AB cert. MD, University of Cincinnati College of Medicine, Cincinnati, OH; Int., University of Cincinnati Medical Center, Cincinnati, OH; Res., University of Texas Health Science Center at Houston, Houston, TX; Fellowship, University of Cincinnati Medical Center. Prefers group or institutional type practice in a medium to large-sized community. Write Jerome G. Wiot, M.D., 803 East 6th St. #401, Newport, KY 41071.

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Atypical Lyme Borreliosis

NICHOLAS H. BARTENHAGEN, M.D.

Perfect health, like perfect
beauty, is a rare thing; and
so, it seems, is perfect disease.
— Peter Latham (1789-1875)

Was man weiss, man sieht.
— Goethe

Since its first victims from southeast Connecticut appeared at the Yale Rheumatology Clinic thirteen years ago, Lyme disease has undergone extensive geographic and clinical evolution. Initially seen as an arcane and provincial arthritis, it has expanded to encompass a long swath of Atlantic coastal states; at the same time, it has widened its clinical realm to include cutaneous, neurologic, cardiac, hepatic, and ocular involvement. In 1982, a species of *Borrelia* was serendipitously found in the gut of deer ticks, proving to be the putative infective agent which had eluded seven years of intensive sleuthing.

The literature now contains an array of publications describing the clinical features,[1-3] and treatment[4-7] of typical Lyme disease. However, atypical Lyme disease continues to challenge the diagnostician, even with the advent of serologic testing. A number of circumstances, relating to interactive vagaries of the spirochete (*Borrelia burgdorferi*), its tick vector (*Ixodes dammini*), and the human host conspire to thwart timely diagnosis and delay antiobiotic treatment. The purpose of this article is to offer certain clinical aphorisms which may alert Connecticut physicians to more insidious forms of Lyme borreliosis.

First bear in mind that the geographical boundaries of the tick-vector's domain continue to expand steadily, each summer annexing more previously spared suburban and rural towns. Those physicians currently practicing on the fringe of the encroaching border may prematurely dismiss the possibility of Lyme disease if their patient denies exposure to "endemic" areas.

Second, the deer tick is indiscriminately voracious in its smallest life stages. Most human hosts are quite unaware of its 24-48 hour blood meal. Thus, unsuspecting residents of communities on the infringing rim of tick expansion would be less likely than inhabitants of established endemic areas to look for, discover, and remove feeding pinhead-sized deer ticks, and to report them to their physicians.

Perhaps the infected patient may develop erythema migrans, the pathognomonic skin lesion of Lyme disease, visibly alerting the examining physician to borrelial infection where the history had not. But, should the lesion take an atypical form, or were missed, or never appear, later stages of infection are more likely to elude accurate and timely diagnosis. Retrospective clinical studies suggest that 20% to 25% of people infected fail to exhibit erythema migrans. Wider use of serologic testing will likely reveal a larger substrata of lesion-negative cases.

Thus, with every passing summer, more Connecticut physicians will be encountering more patients with atypical Lyme borreliosis who in prior years would not have been considered at risk for infection.

Without a history of tick bite and erythema migrans, those who present with neurologic disease pose the greatest diagnostic challenge. The spectrum of acute and chronic neurological disease is enlarged each year by new clinical reports. Two stages of neurologic Lyme disease are now recognized: acute inflammation, occurring from a few weeks to several months after exposure to the spirochete; and chronic, late stage neurologic disease, appearing from several months to years after infection.[8-10] Fluctuating meningoencephalitis may initially be attrib-

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NICHOLAS H. BARTENHAGEN, M.D., practices rheumatology in Hartford, and is on the medical staff of Hartford Hospital. He is a member of the Medical and Scientific Committee of the Connecticut Arthritis Foundation.

uted to viral infection. Older people with coincidental cervical or lumbar spondylosis who develop a radiculitis or plexitis may be referred to neurosurgeons or orthopedists. A seventh cranial neuritis occurring from late spring to late autumn should reflexly evoke consideration of Lyme disease, no matter what other possibilities are entertained. Seizures may be the sole presenting mode of late neurologic disease, which may also result in a demyelinating encephalopathy, with personality, behavioral, or mental status deterioration. Other reports describe patients with late neurologic syndromes mimicking multiple sclerosis and amyotrophic lateral sclerosis. Psychiatric illness, without readily evident organic neurologic disease, may ensue years after initial infection.[11-13] Regrettably, it seems that the delayed cerebromyelopathic stage is less responsive to antibiotic therapy than the earlier, inflammatory stage.

In like manner, borrelial arthritis *sans* erythema migrans will continue to be misdiagnosed to the extent that the increasing prevalence of atypical arthritis is not matched by a clinically poised heightened awareness and a balanced use of serologic testing. This is especially important in the differential diagnosis of arthritis in children and young adults.[14-15]

Emerging from the long-dominant shadow of overt inflammatory joint disease is a newly recognized subset of musculoskeletal borreliosis which may goad the diagnostician to still higher levels of clinical acumen. Beleaguered by a coterie of patients with chronic aches and fatigue, we should now be aware that within this fibromyalgic/arthromyalgic group may lurk a patient or two with *Borrelia* infection. Nearly 20% of patients with proven infection untreated in the primary stage later experienced chronic fluctuating arthromyalgias,[16] which, coupled with profound fatigue, can be quite disabling. About 30% of these patients adrift in this netherworld of musculoskeletal Lyme disease may briefly develop recurrent erythema migrans, thereby offering the physician a second opportunity to diagnose the condition correctly.

A previously fit long-distance runner suddenly collapses and is brought to the hospital in complete heart block: borrelial carditis occurs early after infection, sometimes coincident with early neurologic disease, sometimes in complete clinical isolation, and without history of preceding tick bite or erythema migrans.[17] The conduction disturbances which predominate are temporary, but potentially lethal. As yet, unlike joint and neurologic disease, a delayed chronic myocarditis or cardiomyopathy does not seem to follow acute carditis.

With reports describing iritis, panophthalmitis, stromal infiltrates, and optic neuropathy,[18-20] the broadening clinical spectrum enters the orbit of the opthamologist. A recent paper describes biopsy-proven borrelial hepatitis.[21]

In fulfilling its entomological Manifest Destiny, the *Ixodes* tick can be expected to populate to the maximum possibly every sustainable niche limited only by available food supply. Its expansion probably accelerated by birdborne emigrants, it will likely come to inhabit extensive portions of this state, distributed in densities proportionate to available hosts, especially white-tailed deer. As the deer population increases, and as alternative biped hosts seek homes in bucolic settings, the ecological equation is prime for a significant surge in the prevalence of Lyme disease in Connecticut. Atypical forms will constitute a significant proportion of cases, and will likely be seen, and hopefully recognized, by many more physicians practicing in this state.

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Treatment of Lyme Disease

ROBERT T. SCHOEN, M.D., F.A.C.P.

ABSTRACT—Lyme disease, a tick-transmitted spirochetal infection, can be divided into three stages that can overlap or occur alone. The goals of antibiotic therapy in stage one are to shorten the duration of early disease and to prevent the development of later stages of the illness. This can usually be accomplished with oral antibiotic therapy. Later stages of the illness are frequently more difficult to treat, requiring prolonged oral or intravenous antibiotic therapy.

LYME disease is a multisystem disorder recognized in 1975 in patients living near Lyme, Connecticut.[1] Erythema chronicum migrans (ECM), a characteristic rash seen in 30% to 60% of individuals with Lyme disease, was described in Sweden in 1909.[2] Lyme disease has been reported from 33 states and from all continents except Antarctica. In the United States, the number of new cases approximately doubles each year. Lyme disease is a spirochetal infection, caused by a newly recognized organism, *Borrelia burgdorferi,* transmitted primarily by ticks of the *Ixodes ricinus* complex, including *Ixodes dammini.* It is now the most commonly reported tick-transmitted illness in the United States.[3]

Lyme disease can be divided into three stages that can overlap or occur along. As in other spirochetal infections, antibiotic therapy is most effective when given early in the illness. The diagnoses of Lyme disease depends on a history of potential exposure to ticks in an endemic area, especially during the spring and summer, recognition of characteristic clinical features, and the use of Lyme disease-specific serologic testing, particularly during later stages of the illness.

Stage One (Early Disease)

ECM

Approximately 30% of individuals remember a tick bite several days to one month before they develop Lyme disease. ECM, a red macule or papule may develop at the site of the bite and, when present in its typical form, is diagnostic. The rash begins as a red macule or papule, expanding over several days often to greater than 10cm in diameter. The advancing ECM rash has a distinct outer border, and there may be clearing, bluish discoloration, vesicle formation, or even necrosis of the center of the rash. If untreated, the rash usually fades within one to four weeks, although occasionally it may persist for months. During this period, when Lyme disease is most successfully treated, the organism is thought to disseminate hematogenously. This may explain the presence in some patients of secondary annular skin lesions. These resemble the primary ECM lesion but are usually smaller, lack indurated centers, and wax and wane over short periods independent of the intitial ECM lesion. These lesions also occasionally recur during later stages of the illness, for example, with the onset of arthritis.[4]

Constitutional Symptoms

Hematogenous dissemination of *B. burgdorferi* may also explain the constitutional symptoms, which are sometimes, but not always, seen during this stage. Fatigue, malaise, fever, and migratory arthralgias suggest an influenza-like illness. Headache and stiff neck may suggest aseptic meningitis. The presence, severity, and duration of these symptoms are highly variable.[4]

Treatment of Stage One

The goals of antibiotic therapy at the onset of Lyme disease are to shorten the duration of ECM and associated symptoms and to prevent the development of later stages of the illness. During stage one, the disease can be cured in approximately 90% of patients.[5]

The drug of choice in nonpregnant women, adults, and children with permanent dentition is an oral tetracycline, either tetracycline, 250-500 mg four times daily, or doxycycline, 50-100 mg twice daily, given for ten to 21 days.[5] The range of dosages and duration of treatment suggested reflects the variability of severity of symptoms at disease onset. Severe disease at onset correlates with a greater likelihood of late complications, such as arthritis, than does mild disease at onset. In general, since antibiotic therapy is most effective early in the illness, it is probably appropriate to treat most patients with more

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than mild illness at onset for a full three-week course of antibiotic therapy.

Phenoxymethyl penicillin, 250-500 mg four times daily, or amoxicillin, 250-500 mg four times daily, given for ten to 21 days is also effective therapy for stage-one Lyme disease.[5] Phenoxymethyl penicillin is the drug of choice in pregnant women, lactating women, and children. Since an association between the onset of this infection during pregnancy and fetal malformations has been suggested, and since transplacental infection is postulated to occur very soon after disease onset, it is appropriate to treat pregnant women in whom Lyme disease is suspected with a lower threshold than other individuals.[6] There may also be a role for intravenous penicillin in stage-one Lyme disease in some pregnant women with relatively severe symptoms, although this is unproven.[7] Children with deciduous teeth should receive phenoxymethyl penicillin, 50 mg per kg per day (not less than 1g per day or more than 2g per day).

For adults allergic to tetracyclines or penicillins, erythromycin, 250-500 mg four times daily for ten to 21 days, is a slightly less effective alternative.[5] In children allergic to penicillin, erythromycin, 30 mg per kg per day in divided doses for ten to 21 days, can be used.

Stage Two and Three (Late Disease)

Neurologic Disease

Weeks to months after the tick bite, about 15% of patients develop neurologic abnormalities. These include meningitis (associated with a lymphocytic pleocytosis), encephalitis, cranial neuropathy (Bell's palsy may be the only manifestation of Lyme disease), peripheral radiculoneuropathies, or myelitis. These manifestations may occur alone or in combination.[8] In untreated patients, neurologic abnormalities usually resolve completely within months, although chronic neurologic disease is increasingly recognized. Patients with late neurologic illness have been reported to have neuropsychiatric symptoms, focal disease of the central nervous system , or a fatigue syndrome. Brain imaging by NMR scanning has shown demyelinative plaques in some patients.[9]

Treatment of Neurologic Disease

In patients with mild disease (for example Bell's palsy alone), tetracycline, 250-500 mg four times daily for ten to 31 days, is effective.[10] For individuals with frank meningitis, spinal fluid pleocytosis, and cranial or peripheral neuropathies, intravenous penicillin-G, 20 million units daily in divided doses for ten to 14 days, is usually effective.[11] Cephtriaxone 2g daily for 14 days, is an alternative.[12] In one patient, chloramphenicol, 1g intravenously every six hours for ten days, was effective following unsuccessful intravenous penicillin therapy.[13] Patients with stage-three neurologic complications of Lyme disease, including neuropsychiatric disease, focal central nervous system disease, and fatigue syndromes, have been treated with intravenous penicillin-G in the regimens suggested for serious stage-two neurologic disease with variable success.[9]

Cardiac Disease

About 5% of patients develop cardiac involvement within several weeks after the onset of Lyme disease. In one series, 18 of 20 patients with cardiac disease had fluctuating degrees of atrioventricular block; eight of them developed complete heart block which was more likely to occur when the PR interval was longer than 0.30 seconds. Thirteen of these 20 patients had acute myopericarditis. These patients did not have valvular heart disease. The duration of Lyme carditis is usually brief (several days to several weeks), but recurrences are possible.[14] Patients usually recover completely, although a cardiac death from Lyme disease has been reported.[15]

Treatment of Cardiac Disease

In patients with minor cardiac involvement (first degree atrioventricular block but PR interval less than 0.30 seconds) and no other significant symptoms, therapy with tetracycline as described for stage-one disease is effective. Such patients should restrict their activity, however, and be monitored closely. Patients with Lyme carditis should probably receive aspirin, 325 mg six to 12 tablets daily (or an equivalent nonsteroidal anti-inflammatory drug [NSAID] in therapeutic dose), in addition to antibiotic therapy. Patients with more severe manifestations of Lyme carditis (including first degree atrioventricular block with PR interval greater than 0.30 seconds) should be hospitalized with cardiac monitoring and treated with intravenous penicillin or cephtriaxone as described for serious neurologic disease.[16] Some of these patients will have complete heart block requiring temporary transvenous cardiac pacemaker insertion, usually for less than one week.[14] Persistent conduction system abormalties requiring permanent pacemaker insertion are unusual but have occurred.

Arthritis

Within several days to weeks after disease onset, about 20% of patients develop arthralgias. These are typically brief episodes of migratory joint, periarticular, and musculoskeletal pain, but patients may continue to have attacks of arthralgias for up to six years without developing objective joint abnormalities. In addition to arthralgias, within days to years following untreated ECM, about 50% of untreated patients develop frank arthritis occurring as single or intermittent attacks of joint swelling lasting from several days up to one year. In most patients there is asymmetric involvement of large joints, particulary the knee, and involvement of more than five joints is unusual. About 10% of patients with Lyme disease develop chronic arthritis that can be associated with permanent joint destruction.[17]

Treatment of Arthritis

Several oral regimens are successful in treating Lyme arthritis in approximately 50% of patients. In adults these include doxycycline, 100 mg twice daily given for

31 days, and amoxicillin, 500 mg four times daily with probenecid, 500 mg four times daily, for 31 days.[18]

Children should receive phenoxymethyl penicillin, 50 mg per kg per day (not less than 1g per day but not more than 2g per day) in four doses, for 31 days.[19]

Penicillin-G, 20 million units intravenously daily in divided doses for 14 to 21 days,[20] or cephtriaxone 1g to 2g intravenously daily for 14 to 21 days, are effective in approximately 75% of patients with established Lyme arthritis.[21] Children should receive penicillin-G, 250,000 units per kg per day intravenously in divided doses every four hours, for 14 to 21 days.

In adults who do not respond to antibiotic therapy, especially in individuals with chronic knee arthritis, arthroscopic synovectomy has been successful in some patients. Other patients require management with NSAID therapy. Intra-articular corticosteroid injection can improve function but has been correlated with unsuccessful subsequent antibiotic therapy.[22] In some patients with arthritis, retreatment with an alternative antibiotic regimen results in an improved outcome. Ultimately, in most patients, Lyme arthritis can be arrested without significant joint distruction.

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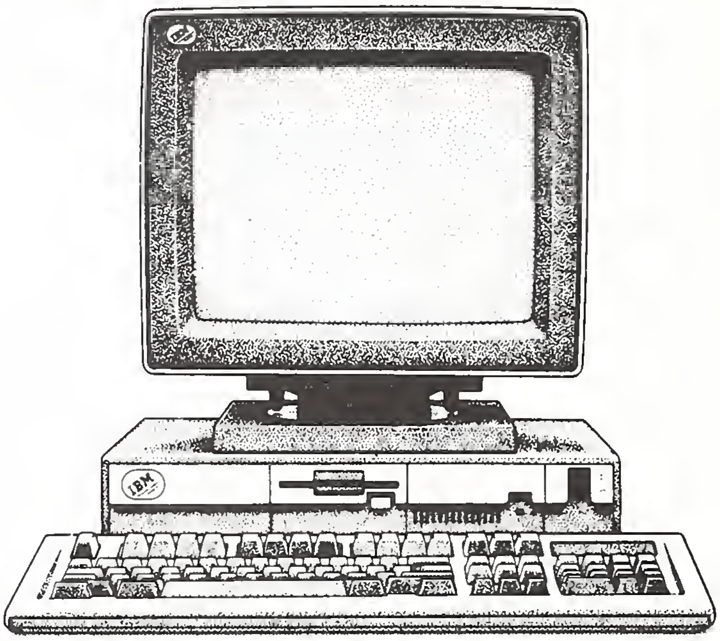

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Abnormal Blood Chemistry Values in Hyperlipidemia

THERESA M. VOYTEK

The medical literature contains scattered reports of the effects of hyperlipidemia on isolated blood chemistry levels but seems to lack a more comprehensive survey of the laboratory abnormalities associated with hyperlipidemia. Such a study would be useful in the diagnosis and in the management of diseases associated with hyperlipidemia, particularly acute pancreatitis, where accurate blood chemistry values are required to facilitate diagnosis, management, and prognosis. This paper summarizes the effects of hyperlipidemia on the laboratory measurements of sodium, potassium, chloride, anion gap, calcium, amylase, mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), prothrombin time (PT), and partial thromboplastin time (PTT).

I. Sodium

Methods for serum sodium measurement include the now rarely used technique of flame photometry and the more recent and frequently used method of sodium electrode potentiometry. When these methods are used on severely lipemic samples, especially hypertriglyceridemic ones, a phenomenon often referred to as pseudohyponatremia results.

In flame photometry, the artificially low sodium value is due to a decrease in the percentage of water in the sample, resulting in less sodium in a given volume, even though the sodium concentration in the water phase may be normal. In other words, the sodium-containing aqueous phase is diluted by the lipids, causing a falsely low sodium measurement.

The other method, potentiometry, uses a sodium electrode and detects only the activity of sodium in the aqueous phase and therefore would be expected to afford a more accurate measurement of sodium than the outmoded flame photometric method. However, analysis by sodium electrode is frequently performed on a diluted specimen (indirect potentiometry) which produces a falsely low sodium with hyperlipidemic samples because a standard volume is used to dilute a sample that contains less aqueous volume since some has been displaced by lipid. This problem can be corrected by:

1. Direct potentiometry, which uses electrodes without diluting the sample.
2. Ultracentrifugation of the sample prior to sodium measurement to remove the lipid phase.
3. Adjustment of sodium concentration obtained by flame photometric or indirect potentiometric methods using a correction formula: change in sodium concentration = 5.8 - 0.0056 (elevated triglyceride concentration -normal triglyceride concentration mg/dl). (A 1983 study by Graber, Quigg, Stempsey, and Weis found this correlation between sodium and triglyceride concentrations in both methods.)

   or:

   Percentage fall in sodium concentration = 2.1 x triglycerides (gm/dl) -0.6 Thus, it is important that the clinician know the technique used to measure sodium in a lipemic sample in order to interpret the result correctly.[1,2,3,4]

II. Potassium

Potassium values are artificially lowered in hyperlipidemic serum by the same mechanism as sodium measurement. However, because so little potassium is extracellular, the effect on potassium measurement is less significant than the effect on sodium measurement.

III. Chloride and Anion Gap

Accurate chloride measurement in hyperlipidemia, like that of the other electrolytes, is method dependent. Chloride is measured usually in diluted samples of serum either by colorimetric assay or by titration. A prospective study by Graber, Quigg, Stempsey, and Weis, using both methods, showed that chloride levels were measured accurately when triglyceride concentration was less than 600 mg/dl but when it exceeded 600 mg/dl, titration underestimated the true value (secondary to the dilution effect described previously for sodium measurement using indirect potentiometry) by: change in chloride concentration = 3.8 -0.0030 (elevated triglyceride concentration - normal triglyceride concentration mg/dl). The colorimetric method, on the other hand, uses a colored product, $Fe(SCN)_6^{-3}$, in the reaction: $3Hg(SCN)_2 + Fe(NO_3)_3 + 6Cl^- \rightarrow 3HgC12 + Fe(SCN)_6^{-3} + NO3^-$ as a

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measure of chloride concentration. In this assay, a high lipid content overestimates chloride concentration by a light-scattering effect. A falsely elevated chloride value consequently produces a low or even a negative anion gap which could lead the clinician to suspect the presence of other diseases known to lower the anion gap (ie, multiple myeloma, hypercalcemia, hypermagnesemia).[4]

IV. Calcium

Colorimetric measurements of serum calcium will be falsely elevated in hyperlipidemic samples because of the abnormally high turbidity. Flame photometry, on the other hand, underestimates serum calcium by the same mechanism of dilution described previously for serum sodium measurement. Recognition of these effects is important especially in the management of acute pancreatitis with hyperlipidemia, since hypocalcemia may be one of the features of acute pancreatitis.

V. Amylase

Amylase activity is measured by a decrease in turbidity of an amylopectin suspension as it is broken down by α-amylase. Severely elevated triglycerides interfere with laboratory measurements of amylase activity giving falsely low results, possibly by two separate mechanisms.

A 1973 study by Fallat, Vester, and Glueck demonstrated an interference in the colorimetric assay by triglyceride levels in the 500-6,000 mg/dl range. They documented that by reducing the turbidity of the serum by serial saline dilutions, the high amylase in patients with acute pancreatitis can be unmasked. They also found that the addition of artificial triglycerides to serum lowered the measured amylase activity, which they explained as an interference with the colorimetric reading by the increased turbidity of the sample. Thus, in severely hypertriglyceridemic patients, several dilutions of the serum may decrease the triglyceride concentration to a point where it no longer interferes with the transmission of light in the colorimetric reaction, allowing a more accurate measure of amylase activity.[5]

This report was followed in 1975 by one that describes the presence of a circulating amylase inhibitor in patients with pancreatitis associated with hyperlipidemia. This study by Warshaw, Bellini, and Lesser reports that the removal of excess lipids by ultracentrifugation of lipemic serum of pancreatitis patients did not eliminate the inhibition of amylase activity, and that this inhibition was removed only by dilution. Also, amylase inhibition was documented in the urine as well as in the serum of hyperlipidemic patients with pancreatitis, which is surprising if triglycerides are believed to inhibit amylase activity directly, because only negligible quantities of triglycerides appear in the urine. These findings suggest that there exists a nonlipid factor in hyperlipidemic pancreatitis patients which is filtered into the urine and which inhibits the activity of amylase in serum and in urine.

An understanding of the effects of hyperlipidemia on amylase measurement is useful to the clinician, particularly in the diagnosis of pancreatitis, since lipids, especially triglycerides, are abnormally high in 12% to 38% of patients with acute pancreatitis. In such patients, serum amylase may fail to rise, making the diagnosis more difficult.[6]

VI. Hemoglobin, MCH, MCHC

Hyperlipemia causes falsely elevated hemoglobin, MCH, and MCHC by Coulter Counter method, because hemoglobin is measured by light absorbance. The hematocrit is unaffected because it is the product of the cell count (measured by electrical impulses generated by individual cells passing through an aperture) and the mean corpuscular volume (determined from electrical pulse heights as individual cells pass) and therefore is not affected by the turbidity of the medium. The lipemic interference of spectrophotometric determinations of the hemoglobin value can be avoided by centrifuging the blood sample and replacing the lipemic plasma with an isotonic electrolyte solution.[7]

VII. PT/PTT

PT and PTT are measured by recording the increase in turbidity which occurs in a blood sample as clotting occurs. Hyperlipidemia causes an unpredictable interference with PT and PTT determination. While some lipemic specimens appear to shorten PT/PTT by creating an earlier peak in turbidity, very turbid specimens can mask the normal peak and thereby artificially prolong the PT and PTT. This unpredictable error in cases of severe lipemia can be avoided using a fibrometer, which detects clotting mechanically rather than optically.

VIII. Others

Additional blood chemistry values thought to be affected by hyperlipidemia include SGOT, SGPT, albumin, total protein, bilirubin, creatinine, fibrinogen, glucose, and iron.[8] However, these interferences are not yet well documented.

Table 1

LABORATORY METHODS USED AT ST. MARY'S HOSPITAL (Waterbury) AND ABNORMAL RESULTS ASSOCIATED WITH LIPEMIA

Measurement	*Method*	*Effect of Lipemia*
Na	Indirect Potentiometry (electrode with dilution)	decrease
K	same method as Na	decrease
Cl	Titration	decrease
Ca	Colorimetric	increase
Amylase	Nephelometric (measures decrease in turbidity)	decrease
Hgb	Laser Spectrophotometry (cyanmethemoglobin method)	increase
MCH	$\frac{\text{Hgb} \times 10}{\text{RBC}}$	increase
MCHC	$\frac{\text{Hgb} \times 100}{\text{HCT}}$	increase
PT/PTT	Optical Clot Detection or	increase or decrease
	Fibrometer (mechanical clot detection)	no effect

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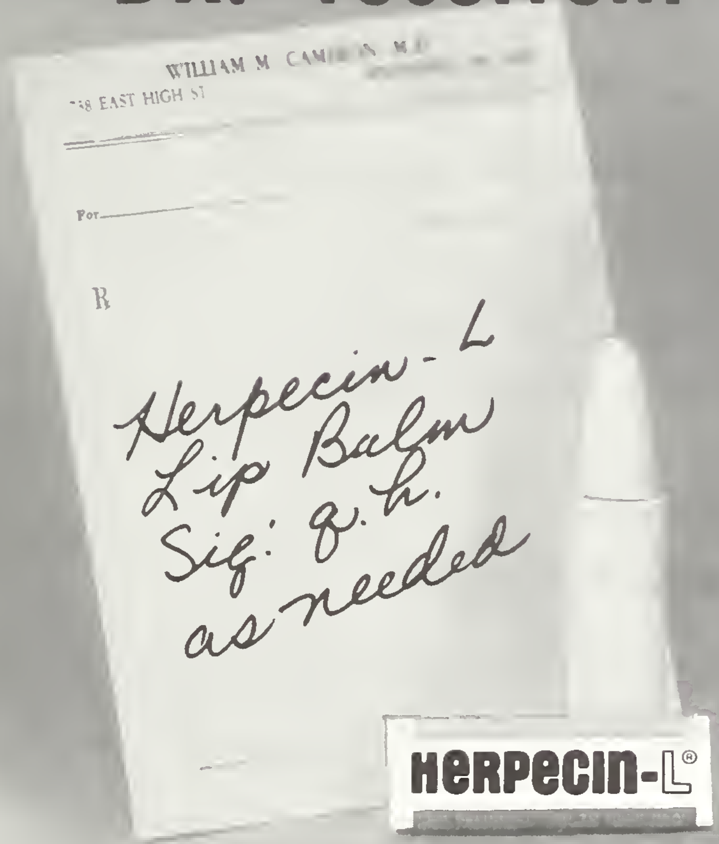

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Important Advances in Clinical Medicine

Neurosurgery

The Scientific Board of the California Medical Association presents the following inventory of items of progress in neurosurgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in neurosurgery that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another. The items of progress listed below were selected by the Advisory Panel to the Section on Neurosurgery of the California Medical Association and the summaries were prepared under its direction.

Head Injury

THE consequences of minor and moderate head injuries have been the subject of ongoing controversy in the medical community for many years. Some have maintained that concussion is never associated with cognitive or behavioral sequelae, while others have argued that most patients suffering minor head injuries, and all with moderate head injuries, have at least transient cerebral dysfunction. Most recently, a series of objective studies has been carried out to detail both the short-and long-term consequences of head injuries that do not produce coma. Pioneering studies from New Zealand, followed by an important investigation at the University of Virginia, have suggested that minor and moderate head injuries can have long-term cognitive sequelae in a substantial number of patients.

It was recently shown that most patients who suffered a minor head injury, defined as a head injury producing a transient loss of consciousness and followed by a stay in hospital of no more than 48 hours, had evidence of transient cerebral dysfunction. Intellectual problems in the areas of memory, attention, and abstract thinking were seen on the initial evaluation within a week of injury. At one month, substantial improvement had occurred; at three months, the great majority of patients had returned to normal. About 15% continued to have significant cognitive sequelae, however. Behavioral manifestations such as headache, depression, insomnia, and imbalance or disequilibrium improved substantially in most patients at three months.

One can conclude from this multicenter study that minor head injury produces transient cerebral dysfunction, most of which is completely reversible and resolves within three months, but that there is a group of patients—"the miserable minority"—in whom long-term cognitive sequelae are present. In California alone, about 40,000 patients are admitted to hospital with minor and moderate head injuries each year. Many are dysfunctional for some months, either in the workplace or at home. Further delineation of this transient cerebral dysfunction and better treatment strategies for such patients are required.

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Rimel RW, Giordani B, Barth JT, et al: Disability caused by minor head injury. Neurosurgery 1981;9:221-228

Timing of Surgical Therapy for Aneurysms

THE successful treatment of intracranial aneurysms remains a major challenge to the specialty of neurologic surgery. Although alternative forms of interventional neuroradiologic procedures are being developed, the time-honored definitive procedure of choice in the treatment of ruptured saccular intracranial aneurysms remains microsurgerical exposure and clip obliteration of the lesion.

It is estimated that about 28,000 subarachnoid hemorrhages occur per year in North America and that a

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third of patients die as a result of their initial hemorrhage or are misdiagnosed. The other approximate two thirds of these patients reach facilities with neurosurgeons capable of definitively caring for the lesion but only half of this patient population has a reasonable outcome. The other half—an estimated 9,000 persons—die of the complications of rebleeding and vasospasm or medical and surgical complications.

The goal of surgical intervention is to prevent rebleeding and facilitate the treatment of vasospasm. Although "late" intervention still has its proponents, a more urgent and early approach may offer a more favorable outcome. Modern principles of neuroanesthesia, adjunctive measures to produce a "slack" brain—using mannitol and cerebrospinal fluid drainage—combined with microsurgical techniques, a judicious use of temporary clips, minimal brain retraction, and dissection within the subarachnoid cisterns and outside the brain offer the opportunity to successfully clip off the offending aneurysm from the adjacent circulation. This can be done soon after the hemorrhage, thus obviating the risk to the patient of rebleeding. Operating early also provides a surgeon the opportunity to open up the arachnoid cisternal pathways and evacuate some of the "toxic" subarachnoid blood and the potential for the topical administration of agents to counteract vasospasm. In the days following early surgical intervention, a patient can be safely managed with hypervolemic-hypertensive therapy should vasospasm become a clinical problem. Surgical treatment is not advisable in those patients in the midst of severe vasospasm, another compelling reason to intervene early.

From a technical standpoint, the surgical repair of aneurysms can now be done early. Although operating early has no direct result either favorable or unfavorable on the subsequent potential problem of vasospasm, it does effectively treat the rebleeding problem associated with these lesions.

An acute physician and public awareness of the "sentinel bleed" or early warning leak that so often seems to occur just before a full-blown aneurysmal rupture can lead to a greater accrual of early and accurately diagnosed patients in good clinical condition. By combining this effort with operating early, the incidence and the morbidity and mortality associated with rebleeding from ruptured intracranial aneurysms can be significantly reduced.

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Intravascular Detachable Balloon Embolization of Intracranial Aneurysms

THE current treatment of choice for intracranial aneurysms is neurosurgical clipping. This procedure may be compromised due to the anatomic location, configuration, size, or calcification of an aneurysm. Detachable balloon occlusion may provide an alternative therapy for selected cases of difficult aneurysms.

Under fluoroscopic visualization, a silicone balloon is flow-directed through the intracranial circulation and guided directly into the aneurysm. Using real-time subtraction or "road mapping" techniques, the balloon is inflated with a hydrophylic polymer, hydroxyethyl methacrylate, which solidifies to create a permanent embolic agent. The balloon is then detached within the aneurysm, and angiography is done to confirm occlusion of the aneurysm with preservation of the parent artery. Ectatic aneurysms without a neck may be treated by occluding the aneurysm or the parent artery (or both).

The procedures are done from a transfemoral approach using local anesthesia to permit continuous neurologic monitoring of the patient's condition. The technique has been used to treat aneurysms of the proximal, mid, and distal basilar, posterior cerebral, lateral posterior choriodal, cavernous internal carotid, posterior communicating, carotid ophthalmic, carotid bifurcation, and middle cerebral arteries.

Because intravascular embolization of intracranial aneurysms is still a relatively new therapy and long-term follow-up is required, the patient selection criteria are conservative. Our series of more than 200 includes patients with aneurysms in which standard neurosurgical clipping techniques have failed, aneurysms in surgically inaccessible areas, or aneurysms associated with high surgical morbidity or mortality, or patients judged to be clinically unstable for general anesthesia and craniotomy.

The largest reported series has been from the Kiev Neurosurgical Institute, where 532 aneurysms have been treated with a mortality of approximately 7%. In this series only those patients not treatable by balloon occlusion were treated by craniotomy and clipping. It is hoped that advances in materials, techniques, and scientific exchange will continue to improve this developing technology.

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Indications for Cerebral Revascularization

CEREBRAL revascularization remains a viable treatment option for patients with cerebrovascular disorders. The International Cooperative Study of Extracranial-to-Intracranial Arterial Anastomoses helped to redefine and therefore limit the indications for these procedures and improved our understanding of cerebrovascular ischemia. An extracranial-to-intracranial (EC-IC) vascular anastomosis is clearly not efficacious in the treatment of patients with thromboembolic cerebrovascular disease. It is, however, a valid therapeutic option for a patient with the relatively rare recurrent transient ischemia from hypoperfusion that is refractory to optimal medical management.

The difficulty lies in deciding which patients suffer from cerebrovascular hypoperfusion and will therefore possibly benefit from revascularization of an ischemic vascular region. These patients must be studied and selected carefully. Attendant medical problems must be brought under optimal control. If patients remain symptomatic despite trials of aspirin and anticoagulants and they are reasonable candidates for an operation—from an anesthetic-risk perspective—then they may be considered for an EC-IC bypass procedure. Reproducible signs and symptoms of hemodynamic compromise must correlate with a demonstrable pathologic disorder on radiologic studies. Four-vessel head and neck angiography, including aortic arch views, is essential to document vascular occlusion or stenosis, the presence or absence of a collateral blood supply (or steal), and the location and caliber of extracranial vessels. Cerebral blood flow studies using stable xenon computed tomography with and without activation using acetazolamide (Diamox) have helped correlate ischemic symptoms with regions of relative hypoperfusion and limited autoregulatory reserve. Magnetic resonance (MR) imaging will reveal information about ischemia or infarction and is particularly useful when assessing posterior circulation vascular insuffiency. MR imaging will also document ventricular size and rule out other lesions, such as cyst, tumor, hematoma, or arteriovenous malformation, that might mimic ischemic cerebral disease.

EC-IC bypass remains an important adjunct in the treatment of patients with unclippable giant intracranial aneurysms. If hunterian ligation or an aneurysm-trapping procedure is contemplated, a prophylactic EC-IC bypass to the appropriate vascular territory should be considered. Infective or traumatic intracranial aneurysms occasionally require excision (including a segment of the parent vessel). In these instances, an EC-IC bypass can maintain the viability of the tissue in the distal vascular bed of the sectioned parent vessel.

Deciding which procedure to do—anterior versus posterior circulation revascularization—is based on individual anatomic and pathologic factors, with the bypass directed at the ischemic region of greatest need. The techniques of these procedures have been well described. The formation of an anastomosis bewteen the extracranial and intracranial circulation is a low-risk procedure, and long-term patency rates are high—90% to 98% in major studies. Venous interposition grafting has been described with good results but slightly lower patency rates—8% to 85%.

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Brain Tissue Transplantation

SINCE the early 1970s when neuroscientists began to describe the connections formed by fetal rat neurons transplanted to neonatal or adult rats, interest in the transplantation of mammalian neural tissue has been growing. Early experiments showed the potential of using fetal tissue transplantation techniques to study patterns of neuronal development, synaptic plasticity, and neural regeneration after injury. In the late 1970s, scientists in Scandinavia and the United States found that fetal dopaminergic neurons and adult adrenal medullary tissue could be transplanted to the brains of adult rats that had undergone nigrostriatal lesioning with 6-hydroxydopamine. Recipients of these transplants showed improvement in motor abnormalities. These results raised the exciting possibility that the transplanting of brain tissue might eventually be used to treat neurologic diseases in humans.

After extensive experimental work in rodents and limited experimental work in lower primates, Swedish surgeons began to implant autologous adrenal tissue stereotactically into the caudate nucleus or putamen of patients with advanced Parkinson's disease. None of the patients experienced more than transient benefit. Surgeons in Mexico City, however, have reported persistent improvement after transplanting adrenal medullary tissue to the caudate nucleus. The patient selection and the operative procedure used by the Mexican surgeons were different from those of the Swedish team. The patients treated by the Mexican group were much younger than those in the Swedish study, who were more typical of patients with Parkinson's Disease. The Mexicans used an open craniotomy and placed the adrenal grafts at the head of the caudate nucleus in contact with the cerebrospinal fluid, which may contain trophic factors that promote transplant survival. Two of the patients operated on by the Mexican group died within 45 days of causes apparently unrelated to the operation.

Although highly experimental, the adrenal-to-brain transplant must now be considered of possible clinical significance. Similar transplantation programs have been started at centers in the United States, but the more recent reports from several of these centers suggest no benefit from such transplants, and the authors urge caution in expanding ongoing human research.

Parkinson's disease is not the only neurologic disease in which brain tissue transplantation may eventually play a role. Neuroendocrine disorders, including genetic deficiencies of vasopressin and gonadotropin-releasing hormone in rats, have been ameliorated by fetal transplants. Fetal septal grafts can functionally reinnervate the hippocampus and dentate gyrus of adult rats after septal-hippocampal lesioning. The potential application to Alzheimer's disease has intrigued many researchers. Experimental work with animal models of traumatic and ischemic brain injury is also in progress. The development of brain tissue transplantation as an experimental therapy for a variety of neurologic diseases must await further basic research in rodents and lower primates.

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Lumbar Stenosis in the Elderly

PERSONS 60 years of age or older are susceptible to lumbar stenosis caused by degenerative disease, hypertrophied articular facets, thickened ligaments, and herniated discs. This elderly population tends to have associated medical problems that potentially increase their surgical risks, but with the ever-increasing number of elderly people, more will be referred to neurologic surgeons for help.

Characterized by low-back pain with distal radiation, lumbar stenosis causes poorly localized pain that mimics intermittent claudication of an ischemic origin. Pain may be well lateralized in the lateral recess syndrome. Walking or standing usually increases the pain; flexion of the lumbar region, however, may alleviate it. The common differential diagnosis is vascular claudication, which causes severe calf cramping that can be relieved by standing and decreased exercise.

Several recent studies have shown that elderly patients who are medically stable do well after surgical decompression by laminectomy. Surgical intervention is indicated when pain hinders a patient's mobility. Absolute indications for an operation are weakness and bowel or bladder dysfunction. Conservative therapy, including bed rest and flexion exercises, can be tried if pain is not intolerable and no other neurologic deficits exist. The surgical procedure is laminectomy with foraminotomy and undercutting of the facets, if needed. Although uncommon, articular microdiscectomy is done when a herniated disc is seen.

In a recently reported series, 74 elderly patients underwent lumbar decompressive procedures. Most of these patients had acquired stenosis with a minor component of trauma. All had back (70%), leg (83%), or thigh (35%) pain. About a third had gait dysfunction, and less than 10% had incontinence. The mean duration of pain was more than six years. About 25% of the patients had associated medical illnesses such as hypertension and angina. The radiologic evaluation was primarily a myelogram with a computed tomographic (CT) scan; magnetic resonance imaging, however, being noninvasive and providing excellent anatomic resolution, is gaining popularity with neurologic surgeons and replacing the myelogram-CT scan combination. The surgical outcome was similar to that in other recent reports—more than 80% had significant improvement with either no pain or the occasional use of analgesics. Less than 5% were left unchanged after the operation, and no one was made worse.

Patients are able to tolerate symptoms of lumbar stenosis longer (average, six years) than they are cervical stenosis (average, two years). A loss of hand function is more debilitating than a loss of lower extremity function, causing patients to seek medical treatment sooner for cervical stenosis.

Surgical treatment must involve full decompression of the cauda equina and roots for successful recovery. If needed, the medial aspects of the facet should be removed to ensure that the existing root is adequately freed. The rarely encountered free fragment of disc is removed, but, to help provide stability, bulging disc with an intact annulus and posterior facets is not removed. Vertebral subluxation is rare after the operation because only the medial aspect of the facets is removed and the joint is kept intact. Mild symptoms caused by vigorous exercise or radiologic findings without symptoms should not be criteria for an operation. These patients should be observed clinically, and only when symptoms and signs are severe should repeat radiologic studies be done.

Age is not a contraindication for lumbar decompression for a medically stable patient. Patients have typical signs and symptoms that in the future can be evaluated by MR imaging. Surgical treatment must achieve full decompression to be successful with maintenance of the facet joints for stability. Asymptomatic patients with radiologic findings are not surgical candidates.

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Central Nervous System Diseases in AIDS

THE number of patients with the acquired immunodeficiency syndrome (AIDS) has continued to double every year. By April 1988, there were more than 60,000 cases of AIDS reported to the Centers for Disease Control (CDC) in Atlanta. Epidemiologic studies have shown that 39% of such patients manifest significant neurologic disease at some time during their life and that the neurologic symptoms were the first manifestations of AIDS in 10%. Furthermore, intracerebral mass lesions will develop in 10% of all AIDS cases, so we can assume that there already have been 23,400 cases of neurologic disease and 6,000 of intracranial masses associated with the present epidemic.

Computed tomographic (CT) brain scans carried out in patients with neurologic symptoms show focal lesions in 38% and atrophy in 33%; they are normal in 29% of cases. The causes of focal lesions include *Toxoplasma* abscesses (50% to 70%), primary central nervous system (CNS) lymphomas (10% to 25%), progressive multifocal leukoencephalopathy (10% to 22%), *Candida albicans* abscesses (3%), cryptococcomas (2%), Kaposi's sarcoma (2%), tuberculous abscesses (1%), and focal viral encephalitis (1%); no specific etiology can be documented in 10% of cases. All causes but progressive multifocal leukoencephalopathy can produce intracerebral masses.

The treatment of intracerebral mass lesions is usually a presumptive three-week trial of the anti-*Toxoplasma* agents pyrimethamine and sulfadiazine. If the masses shrink on that therapy alone, it is presumed that the patient harbored a *Toxoplasma* brain abscess, and that regimen is continued for life. If corticosteroid therapy has been instituted, it must be discontinued, and the legion must not recur before the presumptive diagnosis of toxoplasmosis is made. If any or all of the masses enlarge at any time during therapy, or if they do not shrink by three weeks, it is unlikely that *Toxoplasma gondii* is the cause. A CT-directed stereotactic biopsy is recommended for any remaining lesion. The low risk—1% mortality or major morbidity—of CT stereotaxy, done with the patient receiving local anesthesia, and the likelihood of finding a treatable cause of the mass (85%) combine to make such a surgical approach a viable option in these highly selected cases.

Primary CNS lymphomas in patients with AIDS are the same high-grade B-cell malignant tumors and produce similar symptoms as the primary CNS lymphomas that develop in the absence of immunosuppression. These lesions respond to radiation therapy—4,000 rads over three weeks—in more than 85% of cases when evaluated by CT scan and neurologic examinations. Patients' survival is increased threefold to fourfold over that of nonirradiated cases. Unfortunately, the systemic illnesses associated with AIDS are wholly responsible for limiting patients' survival to a few months; improved treatment of the systemic illnesses is bound to increase the clinical impact of successful lymphoma therapy. Because in 1.9% of all patients with AIDS, a primary CNS lymphoma will develop, and CDC predictions for 1991 include 74,000 new cases with a total of 145,000 receiving treatment during that year, the influence of AIDS on neurooncology can be estimated. It is possible that 1,848 primary CNS lymphomas will be diagnosed in 1991; this number approximates the 1,500 low-grade gliomas and 2,250 meningiomas treated yearly in the US.

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Controversies in Cartoid Endarterectomy

THE practice of carotid endarterectomy has in recent years been the focus of tremendous controversy, which has revolved around three issues: efficacy with regard to preventing stroke, the appropriateness of patient selection for the procedure, and the surgical complication rate.

The only randomized controlled studies comparing the efficacy of cartoid endarterectomy with that of medical management for preventing stroke and death have yielded equivocal results. Some clinicians have attributed this to the high perioperative complication rates found in these studies, which were done more than 15 years ago. They point out that the stroke incidence was significantly reduced in patients with a successful—that is, uncomplicated—operation. A number of other reports of nonrandomized clinical trials suggest that cartoid endarterectomy can reduce stroke risk, but definite proof of its efficacy must await the completion of several ongoing clinical trials.

More than 100,000 carotid endarterectomies were carried out in the United States in 1985, and about half of these were done in patients without transient ischemic attacks (TIAs) of a carotid artery distribution. A recent mulitcenter review of the indications for carotid endarterectomy found that almost a third of the procedures were considered inappropriate according to criteria derived from the medical literature by a panel of experts. The indications for carotid endarterectomy can, in general, be rated as follows:

Appropriate

- Hemispheric TIAs or amaurosis fugax associated with ipsilateral severe carotid stenosis (greater than 70% diameter reduction) or with a large, complex, ulcerated carotid plaque

Equivocal

- Completed stroke associated with severe stenosis or ulceration
- TIAs or amaurosis fugax with moderate stenosis (50% to 69%)
- Asymptomatic patients with severe stenosis

Inappropriate

- Any symptom category associated with a nonulcerated, minimally stenotic lesion (less than 50%)
- Patients with high surgical risk, such as the American Society of Anesthesiologists class 5.

Perioperative complication rates reported for carotid endarterectomy may vary from 1.5% to more than 20%, with most multicenter studies showing rates between 5% and 10%. A rate of postoperative mortality and disabling neurologic deficit much above 5% appears to negate most of the potential benefit of carotid endarterectomy. Reported clinical experience suggests that electroencephalographic monitoring, selective shunt use, meticulous surgical technique, intraoperative completion angiography, and cerebral protection with the use of barbiturates can reduce the rate of complications.

Controlled randomized studies of carotid endarterectomy currently underway should answer the most important questions regarding efficacy and safety. Until the results of these studies are available, carotid endarterectomy should be reserved for the treatment of patients with carefully established indications, and its performance should be limited to surgeons and at hospitals with acceptable complications rates.

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Natural History of Cerebral Aneurysms

TO determine the effectiveness of therapy for cerebral aneurysms, the natural history needs to be defined. This is especially the case today because advances in medical technology have allowed surgical and radiologic access to complex vascular lesions in the brain. Such information concerning the natural history allows physicians to make rational decisions concerning treatment modalities.

Patients who have a cerebral aneurysm usually present after the aneurysm has ruptured, causing a subarachnoid hemorrhage (SAH). The average age at which an aneurysmal SAH occurs is 48 years. Frequently patients will experience a minor "warning" hemorrhage that will present as a severe headache days to weeks before a subsequent major cerebral hemorrhage.

Some studies suggest that 10% to 15% of patients with aneurysmal SAH die immediately after hemorrhage and before admission to hospital. If consigned to nonsurgical therapy, the remaining patients have on average a 50% mortality by the end of six months. There are three common causes of death: the original hemorrhage with an intracerebral hematoma; the subsequent occurrence of cerebral vasospasm; and rehemorrhage. The microsurgical clipping of ruptured aneurysms is specifically designed to prevent the highly lethal rehemorrhage. The risk of rehemorrhage—in some studies as high as 50%—is particularly great during the first few days after the initial hemorrhage. Mortality at six months in conservatively treated patients is strongly correlated with the neurologic grade on admission: grade 1 (normal), 15%; grade 2 (stiff neck and headache), 30%; grade 3 (lateralizing neurologic signs), 50%; grade 4 (decreased level of consciousness), 65%; and grade 5 (comatose), 90% to 100%.

If conservatively treated patients survive their initial bleeding episode, they do not remain free of the risk of a subsequent hemorrhage. Long-term studies indicate that patients whose aneurysms have ruptured and who survive the initial acute period—the first six months—face a 3% to 5% risk per year of subsequent rehemorrhage with an associated 60% mortality.

Whereas the natural history of ruptured aneurysms is relatively well defined, the natural history of unruptured aneurysms is less well understood. Because of the high mortality (and morbidity) associated with the rupture of a cerebral aneurysm, attention has been focused recently on attempting to define the hemorrhage rate of intact cerebral aneurysms. Most studies suggest a risk of 1% to 2% per year for patients whose cerebral aneurysms are discovered accidentally during cerebral angiography, computed tomographic or magnetic resonance scanning, or evaluation for multiple subarachnoid aneurysms. A size greater than 10 mm and systemic hypertension may increase the risk of hemorrhage.

Given the preceding considerations and the relatively low risk of operations on unruptured aneurysms, in recent years the preferred management of asymptomatic, unruptured aneurysms has been surgical, assuming the patient is healthy and the aneurysm is accessible.

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Abstracts: Third Annual Research Day

DANBURY HOSPITAL

Introduction

Danbury Hospital's Third Annual Research Day was held on 18 May 1988. This now traditional endeavor continues to encourage clinical investigation to complement other functions of the hospital. Fiscal perils threaten the institution but Research Day is a beacon that reaffirms our course toward better clinical skills sharpened by curiosity and inquiry into human biology.

Nilo Herrera, M.D., Chairman
Medical Education Committee

Review of Colonic Biopsies at Danbury Hospital in 1987

Colonoscopy is widely accepted as a useful tool for the screening of populations for the presence of colonic neoplasia and for the biopsy or removal of potentially neoplastic or inflammatory lesions.

The surgical pathology reports of all colonic biopsy specimens sent to Danbury Hospital during 1987 were reviewed to determine the distribution of various neoplastic, hyperplastic, and inflammatory lesions. There were 1,332 colonic biopsies performed in a total of 753 patients. Of these, 666 biopsies (50.0%) showed histopathological evidence of neoplasia. Specifically, there were 34 (2.6%) adenocarcinomas, 627 (47.1%) adenomatous, villous, or mixed adenomatous-villous polyps, and three (0.22%) adenomatous polyps with atypia. Two hundred sixty-one (19.6%) biopsies showed hyperplastic polyps. Nonspecific chronic inflammation or normal mucosa was identified in 299 (22.4%) and 50 (3.8%) biopsy specimens respectively. Histopathological criteria for inflammatory bowel disease were satisfied in 48 (3.7%) biopsies.

We conclude that colonoscopy, as utilized in this community, was responsible for the diagnosis of premalignant, malignant, or significant inflammatory disease of the colon in 789 patients, or 76.0% of colonic biopsies performed in 1987. The percentage of neoplasms that were benign (94.8%) is similar to previous reports (range 88.5% to 97.3%).

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Use of Bone Mineral Ratio As a Parameter in the Study of Osteoporosis

This study compared the bone mineral ratio (BMR) of trabecular to compact bone in the normal and osteoporotic patient and proposed the use of BMR between different regions of the skeleton as a new parameter in the study of osteoporosis. The bone mineral of spine, leg, arm or midradius, obtained by photon absorptiometry, was used to calculate the BMR, which is defined as the bone mineral (content or density) at one site divided by the bone mineral at the reference site in the same body. The student t-test score was used to compare the significance of the difference between the normal and osteoporotic subjects.

Using bone mineral density (BMD) and bone mineral content (BMC) of males and females published by Riggs, et al, and Mazess, et al, the calculated BMR are, spine/arm, 1.163 (SD 0.268) in older females, 1.107 (SD 0.28) in younger females with a t-test 0.834. For older males the BMR are, spine/midradius: 0.909 (SD 0.180), and 0.945 (SD 0.169) in younger males with a t-test -0.719. The mean age of older females is 57.6 years (SD 6.1) and younger females 34.5 years (SD 10.5). Older males average age is 58.0 years, and younger males 35.0 years. Comparison between normal and osteoporotic subjects reveals that in males BMR of spine/arm equals 0.448 (SD 0.170) for osteoporotics, and 0.715 (SD 0.225) in normals with a t-test 3.23 and $p<0.0025$. Among females the BMR of spine/arm equals 0.849 (SD 0.272) in osteoporotics, and 1.163 (SD 0.268) in normals with a t-test 15.29 and $p<0.0005$.

The results show that, both in male and female groups, BMR is not significantly different between younger and older normal subjects, although the bone content and density decrease with age. This implies that BMR is age-independent and will not change in Type II (senile) osteoporosis. The BMR decreases significantly for older osteoporotic females and males taking corticosteroids as compared to the age-matched controls, indicative of preferential loss of trabecular bone in the Type I (accelerated) osteoporosis.

The values of BMR depend more on the short-term precision than on the accuracy in bone determination and are not affected by variations in equipment, standards, and techniques. This sensitive parameter, complementary to the existing methods of quantifying the bone mass deficit, promises to be useful for identification of localized and preferential bone loss and the asymptomatic population at risk of Type I osteoporosis.

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Granular Cell Tumors Report of Two Unusual Cases

Granular cell tumors are benign nodular lesions whose histogenesis is uncertain. Most frequently it has been found in the skin and subcutanous tissue. Two cases of granular cell tumor of the cystic duct and cecum are presented. In neither of these cases was there evidence of recurrence or of malignant behavior of the tumors.

Case 1: A 38-year-old white male was admitted to Danbury Hospital with typical biliary colic. An intravenous cholangiogram demonstrated the common duct, but the gallbladder failed to visualize. Elective cholecystectomy was performed. In the middle of the cystic duct, a nodule approximately 1 cm in diameter was palpable; the lesion was excised and a frozen section diagnosis of a granular cell tumor of the cystic duct was made.

Case 2: The patient, a 49-year-old black female, complained of left lower quadrant abdominal pain for one year. At colonoscopy, a polyp measuring 0.8 cm in diameter was found in the cecum; it was removed endoscopically. Histological examination revealed a well circumscribed but not encapsulated submucosal lesion covered by normal colonic mucosa and showing the characteristic features of a granular cell tumor.

To our knowledge, only 19 cases of granular cell tumors of the biliary tract have been reported in the literature. The majority of the patients have been black and female. Our first case is the first known report of the occurrence of this lesion in a white male. Also in our search through the literature, less than 30 cases have been reported of this tumor in the large intestine. All have been submucosal and mostly found in the cecum. Colonoscopy provides a new method of treatment for these lesions and avoids the need of surgery.

Periodic acid-Schiff (PAS) and Luxol fast-blue (LFB) myelin positive granules were present in both cases. An immunohistochemistry stain for S-100 protein was performed on the granular cell tumor from the cecum and was strongly positive.

Muscle origin, an early concept, is no longer regarded as a likely possibility for these tumors. More recently the concept of Schwann cell origin has found strong support in the electron microscopic findings. Proof of Schwann cell origin is also provided by the positive staining of the tumor cells with S-100 protein, a marker of Schwann cells, satellite cells of dorsal root, autonomic ganglia, and other neural crest derivatives. In a recent paper, others report the presence of Luxol fast-blue myelin positive granules in the tumor cells of granular cell tumors as our two cases did, further supporting the origin of this tumor from Schwann cells.

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Evaluation of an Immunoradiometric Assay (IRMA) for Intact Parathyrin (PTH) in Serum

The measurement of parathyrin (parathyroid hormone; PTH) in serum is frequently useful in assessing disorders of calcium metabolism. The circulating intact PTH molecule is metabolized extensively in the liver and kidney into biologically active amino-terminal (NT) fragments and various biologically inert carboxy-terminal (CT), and midmolecule (MM) fragments. Several PTH assays are commercially available, most of which utilize the technique of radioimmunoassay (RIA) and differ primarily in the epitope or region of the PTH molecule recognized by the antiserum. In the past, physicians at Danbury Hospital have ordered CT, CT/MM, and NT PTH assays, which have been referred to external laboratories.

We have evaluated a new PTH assay kit produced by Nichols Institute Diagnostics (San Juan Capistrano, California which measures only the intact PTH molecule. This is a two-site immunoradiometric assay (IRMA) which employs two antibodies and forms an antibody-PTH-antibody sandwich. One antibody is covalently bound to a glass bead and is specific for the 39-84 amino acid (CT) region of PTH, while the second antibody is specific for the 1-34 (NT) region and is radio-labeled with ^{125}I. We compared the results we obtained with the PTH IRMA with those obtained with the PTH assay ordered by the physician on over 100 consecutive patient sera. We found the sensitivity, specificity, and diagnostic efficiency of the PTH is IRMA to be superior to that of the CT or CT/MM assays, and as good as or better than that of the NT assay, especially when the PTH result was combined with an ionized calcium measurement. The tandem of intact PTH and ionized calcium was excellent in discriminating patients with primary hyperparathyroidism from patients with hypercalcemia due to malignancy or other nonparathyroid disorders. The intact PTH IRMA was also found to be more specific than the CT/MM assay in detecting secondary hyperparathyroidism in patients with chronic renal failure and was useful in evaluating kidney transplant recipients for tertiary hyperparathyroidism. The intact PTH IRMA is now performed on a weekly basis in the Danbury Hospital Special Chemistry Laboratory. The intact PTH result is reported with an ionized calcium result from the clinical chemistry laboratory in a graphical format. By performing the PTH IRMA in-house in place of referring the CT, CT/MM, and NT assays to an outside laboratory, we have calculated a potential annual savings of approximately $36,000.

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Quantitative Cholescintigraphy for the Evaluation of Acalculous Gallbladder Disease

Thirty patients with symptoms suggestive of gallbladder disease of two months to 16 years duration, who had normal abdominal ultrasound examinations, gastrointestinal x-ray series, oral cholecystograms, and gastrointestinal endoscopic examinations were selected for this study. Sincalide (C-terminal octapeptide of cholecystokinin-CCK) stimulated quantative cholescintigraphy was performed in all patients and the gallbladder ejection fraction was measured. CCK was injected intravenously slowly (0.02 ug/kg body weight) after normal filling of gallbladder during cholescintigraphy.

Gallbladder ejection fractions (GBEF) ranged from 3% to 89%. Eighteen of 30 patients had exact pain reproduction of variable intensity after CCK administration. In 12 patients GBEF was reduced (normal more than 35%). Seven of 12 patients underwent cholecystectomy and two patients suspected of spasm of the sphincter of Oddi had endoscopic papillotomy during ERCP. All patients were free of symptoms postsurgically during follow-up ranging from two to 17 months. In medically managed patients, symptoms improved on medication in 11, symptoms persisted in three, and no follow-up was available in the remaining seven patients. Histopathologically, all (seven) gallbladders showed evidence of acute and/or chronic inflammation with or without cholesterosis.

In conclusion, Sincalide-stimulated quantitive cholescintigraphy is a useful test for patients with suspected acalculous gallbladder disease who have normal conventional investigational procedures. Patients with decreased gallbladder ejection fraction and exact symptom reproduction following CCK, can be identified as a different subgroup for whom cholecystectomy may be recommended.

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Use of Radionuclide Cerebral Angiography for the Confirmation of Brain Death

An unequivocal diagnosis of brain death is mandatory prior to the withdrawal of life support measures for both ethical and legal reasons. Established clinical criteria usually suffice; however, objective tests such as an electroencephalogram (EEG) may be falsely silent in drug induced hypothermia, intoxication, and shock. Four-vessel contrast angiography has many limitations because of its invasiveness, possible interference with life support measures, and need to transport very sick patients to the radiology department.

Dynamic radionuclide cerebral angiography (DRCA) now offers a noninvasive method for detection of cerebral blood flow to confirm or exclude brain death. DRCA was performed in 21 patients with suspected brain death between 1985 and 1987. Rapid dynamic cerebral images on portable equipment were obtained following rapid intravenous bolus administration of 20 mCi Tc-99m DTPA. In two patients the test was repeated within 48 hours. In 17 of 21 there was no demonstrable intracranial arterial perfusion or venous activity, thus confirming brain death. In four patients faint venous activity was seen in the sagittal sinus only. All these patients also eventually died within 48 hours. Our results were similar to the studies reported in the literature.

In conclusion, dynamic radionuclide cerebral angiography provides a simple and reliable method for the diagnosis of brain death. It can be performed at the bedside on the very sick patient, using portable equipment, without interfering with life support equipment. It is a highly sensitive and accurate technique with no risk to the potentially salvageable patients particularly when EEG and four-vessel contrast angiography may be either impractical or equivocal.

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Serial Bone Mineral Assessment in Patients on Maintenance Hemodialysis

Rapid bone mineral loss is a serious complication of chronic renal failure due to abnormal renal function and secondary to hyperparathyroidism. Fifty patients on maintenance hemodialysis were evaluated for radial midshaft (predominently cortical bone) and lumbar spine (predominently trabecular bone) bone mineral measurements by single photon (SPA) and dual photon absorptiometry (DPA). Thirty of 50 had two or more SPA studies of the forearm and 11 had at least two serial DPA studies of the spine at one year intervals. The age of the patients ranged from 15 to 81 years, with average age of 56.5 years. There were 29 males and 21 females. The duration of hemodialysis treatment ranged from two months to ten years. In 45 patients, PTH levels were significantly elevated but were unavailable in the remaining five.

Bone mass of the forearm and spine was compared with the standard normograms for the patient's sex, age, and racial group. Bone mass of the lumbar spine was reduced in 33; forearm in 15; but both were normal in eight patients. In ten patients, both forearm and spinal bone mass was reduced. There was serial reduction of spinal bone mass in 11 patients. Trabecular bone loss was found to be more pronounced and detected earlier by DPA than cortical bone mass by SPA. Eight patients underwent surgical parathyroidectomy for severe secondary hyperparathyroidism. One patient received 1.25 dihydroxycholecalciferol therapy and another had both. Of these nine patients, there was no further reduction of bone mass in five; improvement of bone mass in three; and continued bone loss in one on serial study.

In conclusion, prolonged azotemia leads to severe loss of bone mineral which in its early stage may be determined only by dual photon absorptiometry. Parathyroidectomy (surgical and chemical) appears to slow the bone loss significantly. Bone mineral assessment by dual photon absorptiometry provides a simple and sensitive means to assess the degree of bone loss due to renal osteodystrophy and to follow up patients who are on maintenance hemodialysis.

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Tissue Banking at Danbury Hospital First Year Experience

In January 1987, our blood bank began coordinating many aspects of the tissue banking program at Danbury Hospital. The main activities and results are:

I. Evaluation, selection, and collection of tissues for transplantation: A. Of the 52 evaluated patients who underwent total hip replacement surgery, 17 successful donations were obtained. B. Four other donors donated autologous tissues consisting of: nasal cartilage; skin; iliac crest; and middle ear bone (incus). C. Two of three cadaver donors who met the criteria provided bones (femur, tibial, fibula, and iliac crest) and corneas to the regional programs.

II. Clinical uses of collected bones: A total of 14 femoral heads were transplanted in ten patients for the following procedures: six, reduction of bone fractures; two, spine fusion; one, removal of failed knee: one, infected nonunion fracture. Also one freeze-dried rib was used for a lumbar interbody fusion and debridement procedure and one other patient received four freeze-dried cortical struts for a nonunion fracture of the femur. One of the autologous tissue donors received his own skin to repair the excision site of a basal cell carcinoma.

Chart review of all transplanted patients showed no complications due to the transplanted tissues.

III. Storage and inventory functions: storage of autologous tissue mentioned above, in-house inventory of frozen femoral heads and freeze-dried bone allografts, provision for proper storage conditions for tissues, on-demand delivery of tissue grafts to the operating room, and preparation of bone grafts for transplantation (thawing or reconstitution) were also achieved.

IV. Quality assurance: a number of procedures were established during this period: procedures for donor's consent and medical history, culturing the graft obtained in the operating room, laboratory testing of the donors, record keeping, and medical chart review of the transplanted patients were developed. These procedures were derived from the existing standards such as those from the American Association of Tissue Banks.

The above accomplishments have been possible with the assistance of the American Red Cross Tissue Banking Regional Program, Orthopedic, ENT, and plastic surgeons, anesthesiologists, and operating room staff; the staffs of the pathology and laboratory departments, and especially the assistance by the blood bank staff.

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Predeposited Blood Donation Program for Patients Undergoing Elective Surgery at Danbury Hospital

In view of AIDS-generated concern over the safety of blood transfusions it is important to offer a viable program of autologous transfusion for elective surgical procedures associated with significant blood loss where ever possible.

Three hundred forty-six patients, 231 females and 115 males, with an age range between 12 to 91 years, donated 552 units of blood in the autologous blood program at Danbury Hospital over a period of a year. No serious donor reactions were encountered and no patient developed anemia which delayed surgery.

The surgical procedures performed among the autologous blood donors were: orthopedics (41%), hysterectomy (19%), plastic surgery (10%), vascular (4%), urologic (3.5%), and others (23.5%), including resection of colon or small bowel tumors, childbirth with or without cesarean section, cholecystectomy, liver biopsy, etc.

Two hundred ninety-eight of 552 (54%) blood units were transfused. Two hundred three of 298 (68%) were transfused in the operating room. One hundred fifty-five (45%) patients did not require transfusion of autologous or homologous blood; 152 (44%) had all blood needs met by autologous blood; 39 (11%) patients did require autologous and homologous blood transfusion as well.

We concluded that 1) autologous blood donation is a safe procedure regardless of age; 2) most of the patients were able to meet the transfusion requirements using only autologous blood; 3) in some of the patients whose autologous blood was insufficient, the exposure to homologous blood could have been avoided or decreased if more units of autologous blood had been predeposited. In some elective procedures, such as resection of an abdominal aortic aneurism, a combination of predeposit and intraoperative-salvage of autologous blood can meet the blood needs.

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Desmopression (DDAVP) Infusion and Predeposit Plasma Donation in a Patient with von Willebrand Disease Type I (vWD-I)

Administration of DDAVP increases levels of factor VIII coagulant activity (VIII-C) and von Willebrand factor (VIII-vW). Response to DDAVP may decrease, likely due to depletion of storage sites (tachyphylaxis phenomenon). Autologous fresh frozen plasma (FFP) may be helpful to maintain hemostasis in the event of tachyphylaxis.

A 23-year-old female with known vWD-I was scheduled for tonsillectomy. Three days prior to surgery, two units of FFP and one unit of red cells (RC) were collected 30 minutes after the intravenous infusion of a first dose of DDAVP (0.3 ug/kg). Autologous FFP and RC were kept. A second dose of DDAVP was given one hour before her operation and the third dose three days postoperatively. There are reports on vWD-I patients who had needed plasma transfusion despite DDAVP therapy. To assure further hemostasis, autologous FFP was transfused on the sixth postoperative day. The VIII-C and VIII-vW levels obtained after DDAVP and FFP are shown in the table.

Response to DDAVP was rapid with peak VIII-C and VIII-vW levels detected 30 to 60 minutes after DDAVP infusion. The highest level was obtained after the third infusion of DDAVP with VIII-C and VIII-vW elevations more than five and four times the baseline value respectively. Excellent hemostasis was achieved. After FFP transfusion, VIII-C levels >60% and VIII-vW >50% were maintained for another 24 hours.

In elective surgery plasma may be collected after DDAVP when the highest level of VIII-C and VIII-vW is obtained. Measuring the DDAVP response may allow optimal timing of plasma donation by pheresis.

vWD-I patients are likely to benefit from the DDAVP response. Autologous plasma may allow hemostasis despite tachyphylaxis to DDAVP treatment and risks of homologous plasma products can be avoided.

	1st DDAVP		*2nd DDAVP*		*3rd DDAVP*		*FFP*	
	Prior	*After*	*Prior*	*After*	*Prior*	*After*	*Prior*	*After*
VIII-C (%)	*34*	*92*	*54*	*110*	*NT*	*189*	*61*	*65*
VIII-vW (%)	*22*	*62*	*32*	*64*	*NT*	*86*	*31*	*54*

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Surgical Bone Donation at Danbury Hospital

Patients undergoing total hip replacement often predeposit autologous blood and are potential donors of surgically removed femur heads. Our blood bank conducts a predeposit autologous blood program and also participates in a regional program to collect, store, test, and use surgical femur heads for bone allograft transplantation.

The blood bank records the medical history and obtains consent for bone donation when the donor presents him or herself for blood donation.

In 12 months, 52 prospective bone donors (PBD) (17 males and 35 females) were evaluated for bone donation. The mean (range) age was 67 (19-89) years. Thirty-four of 38 (90%) patients who underwent elective operations were autologous blood donors (ABD): 11 (61%) patients who underwent emergency surgery for fractures of the femoral neck (FFN) were not autologous blood donors (NABD).

Twenty-one of 34 (62%) ABD and seven of 18 (39%) NABD elective surgery were accepted as PBD. Twelve of 28 femoral heads collected from PBD accepted by history were deferred at time of or after surgery. Causes of bone deferrals were as follows: a) by medical history: 11, avascular necrosis; six, history of carcinoma; three, fever at the time of surgery; one, rheumatoid arthritis; one, history of hepatitis; b) at the time of collection: six, lack of coordination; three, graft deemed too osteoporotic; two, miscellaneous; c) at the time of testing: one, positive serologic test for syphilis; one, positive bacterial bone culture.

None of the donors tested positive for hepatitis B or for HIV antibody. Bone histology showed no evidence of malignancy or other abnormality that would require rejection. None of the ABD require homologous blood transfusion prior or during bone collection.

Our program provides an accessible pool of bone for transplantation, thereby increasing much needed resources. Donors are selected prior to bone collection to minimize the potential transfer of infectious diseases or neoplastic processes.

The blood bank plays a central role the in surgical bone allograft transplantation program.

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Immunoperoxidase Stains in Non-Hodgkin's Lymphoma at Danbury Hospital

Immunohistochemical studies have been done routinely for the diagnosis and classification of non-Hodgkin's lymphomas. The presence of a monoclonal population of cells is an important feature in demonstrating the neoplastic nature of the process. Immunoperoxidase stains for immunoglobulins in paraffin-embedded tissue have been done at Danbury Hospital since 1983, in all cases in which the diagnosis of non-Hodgkin's lymphoma has been made after light microscopy.

In 1985, we introduced a new modality of tissue processing. We now perform the immunoperoxidase stains in fresh tissue which is fast frozen in liquid nitrogen and isopentane. This technique allows better preservation of antigens.

We conducted a retrospective study of 55 cases of non-Hodgkin's lymphoma, including extranodal lymphoma, between the years of 1984-1987. The results show that 35 cases were categorized as B-cell type (64%) and eight as T-cell type (15%). Eight cases were negative for immunoglobulins. Seven of these cases were prior to 1986 and were done in paraffin-embedded tissue. Four cases in which the diagnosis of lymphoma was suspected showed polyclonal immunoglobulins. Only one of these cases was finally diagnosed as malignant lymphoma.

This study demonstrates the usefulness of immunoperoxidase studies at Danbury Hospital in the diagnosis and classification of non-Hodgkin's lymphoma. The use of frozen tissue techniques on fresh specimens has considerably improved our results.

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Preterm Delivery in a Low-risk Population: Clinical Correlates of Placental Pathology

Preterm delivery (PTD) remains a major health problem accounting for a large proportion of fetal-neonatal morbidity and mortality. Acute ascending intrauterine infection (AI) is considered a primary causal factor. Four hundred PTD at this low-risk community hospital were studied for the presence of acute and chronic placental disease processes, and the correlations of these processes with duration of gestation and with patterns of intrauterine growth. AI present in umbilical cord, amnion, or chorionic vessels is not seen in at least 95% of normal term deliveries; among PTD, patients with "excess" AI delivered an average of six days earlier than those with AI at a level seen normally at term or with no AI. Infarction (INF), intervillous thrombosis (IVT), chronic villitis (CV), and hemorrhagic endovasculitis (HEV) were twice as frequent among PTD without AI than in normal term deliveries. The presence or absence of INF, or IVT did not influence duration of gestation; HEV was correlated with a six day shortening of gestation, independent of the presence of AI. INF and presence of abruption showed a negative effect on birthweight in cases lacking AI. The combination of AI and CV yielded both the shortest duration of gestation and lightest infants. While AI is a major influence of duration of gestation, we suggest that chronic placental diseases, reflecting the presence of subclinical congenital viral infection, or abnormalities of decidual vasculature, are more prevalent among PTD without AI as a cause of PTD, and that the presence of these processes is associated with abnormal fetal growth.

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Clinical and Pathologic Correlates of Hypertensive Disease in Pregnancy

Two hundred fifty pregnancies complicated by chronic hypertension (CHTN), pregnancy-induced hypertension (PIH), preeclampsia (PE), or a combination were studied for the correlates of maternal clinical factors, placental gross and microscopic pathology with neonatal weight (Bwt), length, and hematocrit. CHTN was positively correlated with Bwt while PE and grade 3PIH were negatively correlated with Bwt. However, PE and grade 3PIH also correlated with decreasing gestational age (EGA), and multiple regression showed their effects on Bwt to be mediated by EGA. Placental weight was correlated with Bwt through EGA and was not affected by CHTN, PIH, or PE. Placental infarction (INF) was correlated with Bwt, and its effect was independent both of EGA, and the presence of any one or combination of maternal hypertensive diseases. INF also showed a negative association with birth length and ponderal index, also independent of EGA. Clinicians have recognized the inconsistent association of severe maternal symptomatology with severe fetal/neonatal compromise in PIH, and PE. These data suggest that the effect of PIH and PE is mediated primarily by whether there is an effect upon the placenta, or, in other words, PIH and PE act to generate placental pathology with secondary fetal compromise. Rather than severity of maternal disease, the determinant of neonatal weight and length is the effect of maternal disease on the placenta, and specifically the generation of placental infarction.

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Placental and Morphometric Correlates of Fetal Distress in Pregnancies Complicated by Gestational Diabetes Mellitus

Infants of diabetic mothers (IDMs) are reported to be at increased risk for fetal distress (FD). This is considered to be due to mechanical difficulties inherent in the delivery of macrosomic IDMs. This study analysed 160 IDMs (Class A) and 160 infants of uncomplicated pregnancies. Mean birthweights did not differ between the two groups; however, mean placental weights were greater and feto-placental weight ratios lower among the IDMs. The frequency of FD was also equivalent in the two groups. In the absence of macrosomia, no excess of FD among IDMs was observed. IDMs with and without FD were further analysed as to association with placental pathology. Histologic indicators of amniotic fluid inflammation (AFI), and particularly umbilical cord inflammation, were the strongest predictors of FD. This confirms and extends our previous demonstration of a link between AFI and FD in a series of pregnancies complicated by fetal bradycardia. We suggested at that time AFI may result in umbilical and chorionic vasospasm, altering placental resistance and fetal perfusion, and predisposing to fetal hypoxia. IDMs showed a strongly synergistic effect of gestational age on AFI-associated FD. In non-IDMs a much weaker effect of gestational age was identified. Between 37 and 42 weeks, normal placental aging may more severely compromise function of the larger (and structurally abnormal) diabetic placenta, rendering it progressively more susceptible to stressors which result in placental insufficiency and fetal hyposia.

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Intrauterine Growth Retardation and Chronic Hypoxia

Intrauterine growth retardation (IUGR) has been linked to an increased risk of long-term neurodevelopmental sequelae. Smoking has been linked to IUGR via the mechanism of chronic decrease in uteroplacental blood flow; chronically decreased supply of oxygen and other nutrients may result in increased fetal erythropoietin production, and polycythemia. Congenital viral infection is thought to result in IUGR secondary to decreased fetal cell number, and not on the basis of chronic fetal malnutrition. Three hundred pregnancies were studied to determine whether an association exists between birthweight (BW), maternal smoking (determined by serum analysis for thiocyanate), chronic villitis (CV, the histology of congenital viral infection), and increased cord hematocrit (HCT). If BW is greater than 3,000 gm, neither maternal smoking nor CR showed a correlation with HCT. For BW less than 3,000 gm infants with CV, those born to mothers who smoked, and those with neither risk factors, demonstrated statistically significantly elevated HCT. Smoking and villitis were, however, frequently coincident in larger than 3,000 gm infants. Infants less than 3,000 gm with CV only showed no elevation in HCT. This study suggests that chronic hypoxia is a common thread linking most IUGR infants. Further analysis of interaction of smoking and CV on BW is necessary to clarify the mechanisms of fetal compromise.

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Failure of Once-Daily Penicillin V Therapy for Streptococcal Pharyngitis

To determine the effectiveness of a single daily dose of penicillin V, 154 patients with group A β-hemolytic streptococcal (GABHS) pharyngitis were randomly assigned to receive 250 mg of penicillin V three times daily for ten days or 750 mg of penicillin V once daily for ten days. The patients in the two treatment groups were comparable to GABHS. A bacteriologic treatment failure was defined as the presence of the same serotype of GABHS in the follow-up as in the initial throat culture and occurred in seven (8%) of the 76 patients in the three-times-daily group ($p<0.05$). These findings support the current recommendation that penicillin V be given in two or more divided doses for a full ten days for the treatment of GABHS pharyngitis.

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Thrombolysis in Myocardial Infarction: Experience at the Danbury Hospital, 1986-88

The Danbury Hospital has participated in the NIH sponsored, multicenter TIMI (Thrombolysis in Myocardial Infarction) study since October 1986, enrolling 34 patients to date. Patients are enrolled if they have had 30 minutes of chest pain and ECG evidence of acute transmural myocardial infarction. Exclusion criteria include a history of poorly controlled hypertension, prior cerebrovascular accident, prior significant bleeding, or age less than 75. Recombinant tissue plasminogen activitor (rtPA) is the clot-specific thrombolytic agent used and must be given within four hours after the onset of chest pain. Patients are then randomized to receive standard medical therapy alone or to undergo percutaneous transluminal coronary angioplasty (PTCA) within 18-48 hours.

Of the 18 patients who received medical therapy, there were no recurrent infarctions. Eleven (61%) crossed over in the protocol and were catheterized because of recurrent ischemia. Five (28%) of these patients underwent PTCA, none had coronary artery bypass graft surgery (CABG). Of 16 patients randomized to PTCA, seven (44%) actually underwent PTCA, six (38%) had CABG, and three (19%) had no intervention after catheterization. Of the total 26 patients who were catheterized (a mean of six days after presentation), 22 (85%) showed patency of the infarct related artery.

Follow-up evaluation includes exercise left ventricular (LV) function studies at ten days and six weeks, exercise test at six months, and periodic interviews and examinations. Complications from (TPA) included minimal gingival bleeding, transient hematuria, and small phlebotomy site hematomas; no blood transfusions were required. Two patients (6%) died from complications related to cardiogenic shock. No intracranial bleeding was seen.

Thus, TPA is a safe and efficacious form of therapy in the treatment of acute myocardial infarction when administered in a community hospital setting. Initial results suggest that mortality and morbidity in patients receiving medical therapy *v* those receiving early PTCA is comparable.

STEVEN A. ROBERTS, M.D., THOMAS GRAZIANO, M.D., LESLIE COOPERSMITH, M.D., RONALD DANDURAND, M.D., ALICE MILLER, L.P.N., DAVID COPEN, M.D., and JONATHAN ALEXANDER, M.D., Department of Medicine, Danbury Hospital. Clinical Instructur (Dr. Graziano); Associate Clinical Professor (Dr. Copen, Dr. Alexander); Department of Medicine, Yale University School of Medicine.

Midforceps Delivery Experience in a Community Hospital

Midforceps deliveries have been both applauded and condemned. Recent discussions have supported their use in carefully selected cases. This study attempts to answer the question of how dangerous are midforceps deliveries in the present era of careful selection. Intrapartum events and the outcomes of midforceps deliveries performed from July 1986 to June 1987 at the Danbury Hospital were examined and evaluated retrospectively. There were 2,331 total deliveries during that period, 1,525 were spontaneous vaginal deliveries or 64% of the total, and 56 were midforceps deliveries or 2% of the total. The statistical significance of the nominal data was determined by using chi square method with Yates correction. Fischer's exact test was used in cases where the expected numbers were very small. The Student t-test was used for the ordinal data. There was a significant difference between midforceps deliveries and spontaneous vaginal deliveries in the following factors: labor abnormalities, fetal stress-distress, labor induction, epidural anesthesia, Apgar score at one and five minutes and neonatal complications. There was not a significant difference in the following factors: abruptio placenta, shoulder dystocia, labor stimulation, post-partum complications, sex, weight, estimated gestational age, fetal acidosis, neonatal outcome, intensive care nursery, or total neonatal length of stay. Conclusions were that midforceps deliveries did not cause significant morbidity or mortality to neonate or mother, and midforceps deliveries continue to provide an option for delivery in selected cases with certain indications.

LESTER SILBERMAN, M.D. and KATHLEEN VARADI, M.D., Department of Obstetrics and Gynecology, Danbury Hospital. Associate Clinical Professor of Obstetrics and Gynecology, Yale University School of Medicine (Dr. Silberman).

Is Antibiotic Prophylaxis Really Necessary for Uncomplicated Internal Hip Fixations?

A peer review organization recommended that antibiotic prophylaxis be given to all fractured hip repairs. Our orthopedic staff felt that the number of infections of patients with uncomplicated internal fixations was extremely low, not warranting the risk of universal antibiotic prophylaxis. In order to confirm their impression, a retrospective study of all uncomplicated closed and open reductions with internal fixations of hip fractures was undertaken.

The study included 650 cases for a seven year period, all uncomplicated hip repairs. Of this total, there were only three deep wound infections (0.5%); four superficial or soft tissue infections (0.6%); and one postoperative septicemia in which the wound remained benign. Overall infections were 1.2%

Two of three patients with deep wound infections had not received prophylaxis; one had received it. Two of four superficial infections had been treated prophylactically and the patient with septicemia had not.

Of the three deep infections, two were infected with coagulase positive staphylococcus. One of these had received prophylaxis; one had not.

Three (37.5%) of the total eight infected cases had received antibiotic prophylaxis; five (62.5%) had not.

This raises the question of whether or not prophylactic antibiotics are really needed for uncomplicated internal hip fixations in an institution with such a low postoperative wound infection rate.

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Cefuroxime Axetil

MAUREEN SULLIVAN, PHARM.D.

Introduction

Cefuroxime axetil (Ceftin®) is a new orally active prodrug of cefuroxime. Upon absorption, this agent undergoes immediate de-esterification to free cefuroxime. Cefuroxime axetil has potential usefulness for the treatment of cutaneous infections, otitis media, lower respiratory tract infections, UTI, and gonococcal infections.

Pharmacokinetics

The bioavailability of cefuroxime axetil is significantly enhanced by concomitant ingestion with food or milk.[1] In children, mean peak plasma concentrations were 33% to 51% higher and the AUCs (area under the plasma level-time curve which is a measure of the total amount of drug which reaches the systemic circulation) were 25% to 88% higher when the drug and milk were given simultaneously than when the same dose was given to fasting children. Peak serum concentrations of approximately 4.5 to 5.5ug/ml of cefuroxime occur approximately 90 to 120 minutes following oral administration of a 500mg dose, with food or milk, in adults and children. Greater than 90% of the absorbed dose is excreted unchanged in the urine by glomerular filtration and tubular secretion.[2] Therefore, concomitant use of probenecid produces higher and more prolonged serum concentrations of the drug.

Microbiology

The spectrum of activity of ceforuxime axetil includes gram-positive aerobes such as *S. aureus* and *Streptococcus* sp (not active against methicillin-resistant staphylococci and enterococci).[2] Cefuroxime is not as active against methicillin sensitive strains of *S. aureus* (MIC_{90} of approximately 2ug/ml) as the first generation cephalosporins. Many gram-negative species, including most strains of beta-lactamase positive and beta-lactamase negative *H. influenzae* and *N. gonorrhoeae,* as well as *Branhamella catarrhalis,* are highly susceptible. The MIC_{90} of cefuroxime for *N. gonorrhoeae* (including penicillinase-producing strains) is 0.1 to 0.5ug/ml. Most strains of *H. influenzae* are inhibited by cefuroxime concentrations of 0.1 to 2ug/ml. In one study, plasma bactericidal titers were determined for 106 plasma samples tested against beta-lactamase positive strains of *H. influenzae.*[1] Six percent had serum bactericidal titers of 1:2, 30% had 1:4, 53% had 1:8, and 11% had 1:16 titers after administration of 500mg tablets of cefuroxime axetil. Cefuroxime is also active against many gram-negative bacilli including *E. coli, Proteus mirabilis, Klebsiella* sp, *Citrobacter* sp, *Salmonella, Shigella,* and *Yersinia.* However, *Providencia rettgeri, Proteus vulgaris, Enterobacter cloacae, Serratia* sp, and *Pseudomonas* sp are usually resistant.

Clinical Trials

Respiratory Tract Infections: Cefuroxime axetil was recently evaluated for the treatment of bronchitis in 27 adult patients and pneumonia in 34 patients.[3] Clinical cure rates of 75% (8/10 with bronchitis and 8/11 with pneumonia) occurred in patients treated with 250mg cefuroxime axetil every 12 hours, 95% (10/10 with bronchitis and 10/11 with pneumonia) in patients treated with 500mg cefuroxime axetil every 12 hours, and 84% (5/7 with bronchitis and 11/12 with pneumonia) in patients treated with 500mg cefaclor every eight hours. In another study of 41 patients with lower respiratory tract infections which compared cefuroxime axetil 500mg bid or tid with amoxicillin 500mg tid, there were no significant differences in response rates between the three regimens.[4] However, in a trial of 51 patients with acute exacerbations of chronic bronchitis treated for 10 days with 1.0g doses of cefuroxime axetil twice daily, three patients discontinued therapy because of insufficient improvement and 14 patients were found to be infected during the week after the end of treatment, six with recurrences due to the original infecting organism, and eight with reinfections due to different organisms.[5] Peak serum concentrations averaged 12.8ug/ml (range 1.5 to

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27ug/ml) with mean peak sputum concentrations of 1.8ug/ml. The MIC_{90} for *H. influenzae* (4ug/ml) was reached in the sputum in only four patients. In another clinical trial, cefuroxime axetil was given to 12 children (aged 19 months to 13.5 years) for a total of 14 episodes of lower respiratory tract infection.[6] Doses ranged from 16 to 32mg/kg/day. The drug was taken twice daily after meals. Serum levels did not correlate well with the dose and showed great variability with peak levels ranging from 1.1 to 10.3ug/ml. Six infections were regarded as cured, seven improved, and in one there was no change in clinical status. In four cases, *H. influenzae* was present at the end of treatment.

In a study involving patients with upper respiratory tract infections (tonsillitis 107, pharyngitis 106, sinusitis 65, and otitis media 22 patients), cefuroxime axetil was given in doses of 250mg twice daily and clinical success (resolved completely or improved) occurred in 98% of patients with tonsillitis, 94% of patients with pharyngitis, 86% of patients with sinusitis, and 91% of patients with otitis media.[7]

Cutaneous Infections: In a clinical trial involving 125 patients with skin infections (cellulitis, folliculitis, pyoderma, impetigo, and carbuncle), a clinically beneficial response (cure or improvement) was achieved in 92% of patients who received cefuroxime axetil 250mg bid, in 95% of patients in the cefuroxime axetil 500mg bid group, and in 97% of patients who received cefaclor 250mg tid.[8]

Gonococcal Infections: In a study of oral treatment of uncomplicated urogenital and rectal gonorrhea, cefuroxime axetil 1.5g was compared with amoxicillin 3.0g and clavulanic acid 0.25g.[9] Amoxicillin and clavulanic acid were given as a dose of two tablets of Augmentin® (500mg amoxicillin/125mg clavulanic acid in each tablet) plus four 500mg amoxicillin tablets. Both treatments were administered as a single oral dose and combined with 1.0g probenecid. The failure rate of 0.5% (1/185 patients) in the group receiving cefuroxime axetil, and 3.1% (6/191 patients) in the group receiving amoxicillin plus clavulanic acid. All of the ten infections with penicillinase producing *Neisseria gonorrhoeae* (PPNG) in the group taking cefuroxime axetil and six of 11 PPNG infections in the group taking amoxicillin plus clavulanic acid were cured. The number of patients infected with PPNG was too small to draw definite conclusions about the efficacy of both treatments in this type of infection. Postgonococcal urethritis was observed in 35% of the 111 men treated with cefuroxime axetil and in 32% of the 114 men treated with amoxicillin plus clavulanic acid.

Urinary Tract Infections: Cefuroxime axetil (500 or 250 mg twice daily for seven days) was compared with amoxicillin (250mg three times daily for seven days) in 32 women with recurrent urinary tract infections (78% caused by *E. coli*).[10] Relapse rates at six weeks (documented by typing the infecting organism) were much higher in the patients given cefuroxime axetil (66% for the 500mg dose and 53% for the 250mg dose) compared with a relapse rate of 12% in the group given amoxicillin. In a study involving 31 elderly patients (four catheterized) with urinary tract infections treated with cefuroxime axetil (500mg administered twice or three times daily for five to seven days), the cure rate was 55% at between 5-12 days following therapy and 48% at the three to six week follow up.[11] The study was terminated after the development of three confirmed cases of antibiotic associated colitis in patients having no common contact.

Adverse Effects

The most frequent adverse effects reported during the above clinical trials included diarrhea, nausea, vomiting, and headache. Other side effects have included thrombocytosis, eosinophilia, vaginitis, rash, transient elevation of transaminases, positive direct Coombs test, and antibiotic associated colitis.

Dosing

Dosage recommendations include the following: For otitis media, 125mg bid for infants and those under two years of age, and 250mg bid for those over two years of age. For other infections in infants and children up to 12 years of age, 125mg bid. For infections in children over 12 years of age and adults, 250 to 500mg (for more severe infections) bid are suggested by the manufacturer. Dosage adjustment may be necessary in renal failure since the drug is eliminated unchanged in the urine.

Cost

Table 1 lists a cost comparison of alternative oral agents.

Conclusions

A wide variation in serum levels has been noted in adults and in children with cefuroxime axetil therapy due to variable bioavailability that may pose a therapeutic problem in some patients. This is exemplified in infections caused by *S. aureus* where peak serum levels of cefuroxime achieved in many individuals only approximate the MICs of the drug against this organism. Other oral cephalosporins and penicillins provide more consistent bioavailability and higher serum levels. In addition, the dependence of food intake to improve absorption of the drug may make the attainment of adequate serum levels unreliable in the sick individual with a poor appetite.

The findings of the above clinical trials highlight the therapeutic efficacy of cefuroxime axetil in the treatment of respiratory tract, cutaneous, urinary tract, and gonococcal infections. However, its cost is substantial and less costly therapeutic alternative agents such as trimethoprim-sulfamethoxazole, amoxicillin-clavulanate, amoxicillin, and cephalexin should be considered first-line therapy.

Table 1

Drug	*Drug Dosage**	*Cost of 7 days of treatment++*
Amoxicillin (Polymox®)	250mg q8h	$ 1.76
Amoxicillin-clavulanate potassium (Augmentin®)	250mg q8h 500mg q8h	$17.83 $26.77
Cefuroxime axetil (Ceftin®)	250mg q12h 500mg q12h	$22.68 $43.96
Cephalexin (Keflex®)	250mg q6h	$ 5.68
Trimethoprim-sulfamethoxazole (Bactrim DS®)	1 tab q12h	$ 1.19

* Usual adult dose recommended by manufacturer.
++ Cost to Hartford Hospital Pharmacy (7/31/88)

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Choice of Cholesterol-Lowering Drugs

THE MEDICAL LETTER

The recent surge of interest in lowering serum cholesterol concentrations has led to vigorous promotion of various hypocholesterolemic drugs in the USA. Since the risk of coronary heart disease is increased in patients with high serum cholesterol concentrations, most authorities advise such patients to eat less fat and try to lose weight (The expert panel, *Arch Intern Med,* 148:36, 1988). When these measures fail, cholesterol-lowering drugs are frequently recommended.

LIPOPROTEINS AND TRIGLYCERIDES — Most of the cholesterol in plasmas is carried in low-density lipoproteins (LDL); high serum concentrations of LDL are associated with an increased risk of coronary heart disease. High serum concentrations of high-density lipoproteins (HDL), on the other hand, may protect against coronary heart disease. Triglycerides are carried in the plasma mainly in very-low-density lipoproteins (VLDL); the role of the triglycerides and VLDL in coronary heart disease is uncertain, except in patients with familial combined hyperlipidemia or dyslipoproteinemia, who have an increased risk of atherosclerosis and its complications (DR Illingworth, *Drugs,* 33:259, 1987).

CHOLESTYRAMINE AND COLESTIPOL — The bile acid-binding resins cholestyramine *(Questran)* and colestipol *(Colestid)* lower elevated concentrations of LDL cholesterol. A seven- to 10-year double-blind randomized trial compared the effects of cholestyramine with placebo in 3,806 men, 35 to 59 years old, with a baseline plasma cholesterol of at least 265 mg/dl (the 95th percentile for men in their forties); all patients followed a moderate cholesterol-lowering diet. The 1,906 men in the cholestyramine group had an 8.5% greater average decrease in serum cholesterol and a 12.6% greater decrease in LDL than the 1,900 men in the placebo group. Many patients in the cholestyramine group took less than the recommended 24 grams per day; patients who actually took at least 20 grams per day of cholestyramine for seven years had a 17% decrease in total cholesterol. After seven years, the incidence of nonfatal myocardial infarction or death from coronary heart disease was 8.6% in the placebo-treated patients and 7.0% in the cholestyramine group (The lipid research clinics primary prevention trial, *JAMA,* 251:351, 365, 1984).

In another controlled trial, 116 patients with coronary artery disease and hypercholesterolemia due to LDL elevation were treated with cholestyramine or placebo for five years, in addition to a low-fat, low-cholesterol diet. Cholestyramine decreased LDL cholesterol a mean of 54 mg/100 ml more than placebo did, and slightly increased HDL cholesterol. Angiographic studies showed that 33% of 42 lesions causing 50% or greater stenosis progressed in patients taking placebo, while only 12% of 41 such lesions progressed in those treated with cholestyramine (JF Brensike et al, *Circulation,* 69:313, 1984).

Adverse Effects — The adverse effects of colestipol and cholestyramine are similar; constipation and abdominal pain are common, often accompanied by heartburn, nausea, belching, and bloating (LC Knodel and RL Talbert, *Med Toxicol,* 2:10, 1987). Both cholestyramine and colestipol may interfere with absorption of fat-soluble vitamins and a number of other drugs *(Medical Letter Handbook of Adverse Drug Interactions,* 1987, pp 42 and 46). Many patients complain about the unpleasant grittiness of the resins; a soon to-be-marketed confectionery bar formulation of cholestyramine *(Cholybar)* may prove to be more palatable.

NIACIN (NICOTINIC ACID) — Niacin decreases triglycerides, total serum cholesterol and LDL cholesterol, and increases HDL cholesterol. In one placebo-controlled study, men with one or more previous myocardial infarctions who took 3 grams of niacin daily had a lower incidence of nonfatal myocardial infarction (The coronary drug project research group, *JAMA,* 231:360, 1975) and, nine years after the study ended, a lower mortality rate (PL Canner et al, *J Am Coll Cardiol,* 8:1245, 1986). Another study combined niacin with colestipol and compared the combination with placebo in men with previous coronary bypass surgery; after two years, those taking the active drugs had less progression of old atheromata, fewer new ones and more regression of atherosclerosis in both native arteries and grafts (DH Blankenhorn et al, *JAMA,* 257:3233, 1987).

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Adverse Effects — Many patients refuse to take niacin because it can cause severe flushing, pruritus, and gastrointestinal distress; some of these problems may be minimized by taking a low initial dosage and gradually increasing it, and by taking the drug with meals. If flushing persists, taking 300 mg of aspirin 30 minutes before each niacin dose may be helpful. Niacin can also cause hepatic toxicity, glucose intolerance, hyperuricemia, dry eyes, and hyperpigmentation. Concurrent use of niacin and colestipol has been associated with decreased serum concentrations of thyroxine (T4) and thyroxine-binding globulin, but patients have remained euthyroid (L Cashin-Hemphill et al, *Ann Intern Med,* 107:324, 1987).

NEOMYCIN — The "nonabsorbable" aminoglycoside antibiotic neomycin can decrease LDL cholesterol by about 20% but may also decrease HDL concentrations (YA Kesaniemi and SM Grundy, *Arteriosclerosis,* 4:41, 1984). Neomycin has not been approved by the US Food and Drug Administration for marketing for treatment hypercholesterolemia.

Adverse Effects — Neomycin has generally been well tolerated, but intermittent nausea, diarrhea, abdominal pain, and weight loss can occur. The drug actually is absorbed in small amounts from the gastrointestinal tract and can cause nephrotoxicity, vertigo, and permanent nerve deafness in patients with impaired hepatic or renal function or inflammatory bowel disease, and possibly in others with long-term use.

PROBUCOL — Probucol *(Lorelco)* lowers total cholesterol and LDL cholesterol by 10% to 15%, but also lowers HDL cholesterol by 20% to 30% (PN Durrington and JP Miller, *Atherosclerosis,* 55:187, 1985). One trial in 12 patients found cholestyramine somewhat more effective in decreasing LDL cholesterol (DB Jones et al, *Atherosclerosis,* 53:1, 1984). Concurrent use of probucol with colestipol appears to be more effective in decreasing serum cholesterol than either drug alone (CA Dujovne et al, *Am J Cardiol,* 57:36H, 1986; PT Kuo et al, AM J Cardiol, 57:43H, 1986).

Adverse Effects — Probucol has a long half-life and is released from fat stores for months after treatment has stopped. It is generally well tolerated but occasionally causes loose stools and diarrhea and may prolong the QT-interval.

CLOFIBRATE — Clofibrate *(Atromid-S;* and others) lowers serum triglyceride concentrations but is much less effective in lowering LDL cholesterol. In patients with hypertriglyceridemia, an *increase* in LDL can occur when high triglyceride concentrations decrease.

Adverse Effects —During treatment with clofibrate, 5,000 hypercholesterolemic men had an increased rate of mortality due to malignant and gastrointestinal disease, and a higher rate of cholecystectomy for gallstones (Committee of Principal Investigators, *Br Heart J,* 40:1069, 1978; *Lancet,* 2:600, 1984). The drug potentiates the effect of oral anticoagulants; anticoagulant dosage may have to be decreased if the drugs must be used concomitantly. Clofibrate can also cause myositis, especially in patients with renal failure. Its use should probably be limited to patients with severe hypertriglyceridemia that poses a danger of acute pancreatitis and is unresponsive to gemfibrozil, or to patients with familial dyslipoproteinemia, who have a high risk of atherosclerotic complications.

GEMFIBROZIL — A fibric acid derivative like clofibrate, gemfibrozil *(Lopid)* lowers plasma triglycerides and VLDL and can increase HDL cholesterol (*Medical Letter,* 24:59, 1982). When the triglyceride concentration decreases, LDL cholesterol may increase in some patients, but usually not to the abnormal range (GL Vega and SM Grundy, *JAMA,* 253:2398, 1985). A five-year double-blind trial (the Helsinki Heart Study) in 4081 asymptomatic men with hypercholesterolemia showed not only a decrease in triglycerides and LDL cholesterol and an increase in HDL cholesterol in men treated with gemfibrozil, but also a decrease, in the number of myocardial infarctions (56 vs 84 with placebo) (V Manninen et al, *JAMA,* 260:641, Aug 5, 1988).

Adverse Effects — Gemfibrozil is tolerated much better than clofibrate. In the Helsinki Heart Study, only the incidence of upper gastrointestinal symptoms was slightly increased in men taking the drug. Like clofibrate, gemfibrozil may potentiate the effect of oral anticoagulants and also increases biliary cholesterol saturation, which may increase formation of cholesterol gallstones.

LOVASTATIN — Lovastatin *(Mevacor)* inhibits the enzyme that catalyzes the rate-limiting step in cholesterol synthesis. Used alone, it appears to be more effective than any other currently available drug in lowering LDL cholesterol concentrations (*Medical Letter,* 29:99, 1987). In a recent 12-week study, both 20 mg and 40 mg of lovastatin twice daily were more effective in lowering elevated total and LDL cholesterol than 12 grams of cholestyramine twice daily in 264 patients (Lovastatin Study Group III, *JAMA,* 260:359, July 15, 1988). HDL cholesterol concentrations generally increase or remain the same. One recent double-blind trial in 16 patients with non-insulin-dependent diabetes mellitus and mild to moderate hypercholesterolemia found that lovastatin decreased LDL cholesterol by 28%, triglycerides by 31% and VLDL cholesterol by 42% (A Garg and SM Grundy, *N Engl J Med,* 318:81, 1988). The effects of lovastatin, niacin and colestipol have been reported to be additive (MJ Malloy et al, *Ann Intern Med,* 107:616, 1987). When lovastatin is discontinued, as with all cholesterol-lowering drugs, serum cholesterol concentrations generally return to pretreatment levels. The effectiveness of lovastatin in preventing or reversing atherosclerosis has not been established.

Adverse Effects — Lovastatin is generally tolerated better than any other cholesterol-lowering drug, but Medical Letter consultants are concerned about the long-term effects of interfering with synthesis of cholesterol, which is an important component in cell membranes. Drug-related elevations of hepatic enzyme activities have been reported, particularly with heavy use of alcohol. Myositis with creatine phosphokinase (CPK) elevations has also occurred with the drug. Severe myositis, rhabdomyolysis and acute renal failure have been reported, particularly in patients also taking gemfibrozil *(Lopid)* or cyclosporine *(Sandimmune)*, which interfere with metabolism of lovastatin, and in patients with impaired hepatic function (CL Corpier et al, *JAMA*, 260:239, July 8, 1988; DJ Norman et al, *N Engl J Med*, 318:46, 1988). An unpublished Japanese study found that compactin, which is chemically similar to lovastatin, induced lymphomas in dogs. Early concerns about cataract formation related to lovastatin treatment have recently diminished (DB Hunninghake et al, *JAMA*, 259:354, 1988).

FISH OIL —Large amounts of long-chain, highly unsaturated omega-3 fatty acids present in cold water fish can decrease triglycerides and cause small decreases (or sometimes increases) in LDL cholesterol, without affecting HDL cholesterol (BE Phillipson, *N Engl J Med*, 312:1210, 1985; C Von Schacky, *Ann Intern Med*, 107:890, 1987). Fish oil is now available in capsules (Medical Letter, 29:7, 1987). No studies are available either comparing the effectiveness and safety of fish oil with other lipid-lowering drugs or showing that fish oil causes regression of atheromata or decreases the incidence of coronary artery disease.

Adverse Effects — Omega-3 fatty acids from fish can interfere with platelet function and may cause bleeding.

COST OF CHOLESTEROL-LOWERING DRUGS

Drug	Daily Adult Dosage	Cost*
Cholestyramine - *Questran* (Bristol)	16 grams resin, divided	$57.60
Clofibrate - average generic price	2 grams, divided	26.17
Atromid-S (Ayerst)		44.20
Abitrate (Major)		25.45
Colestipol - *Colestid* (Upjohn)	15 grams, divided	41.07
Gemfibrozil - *Lopid* (Parke-Davis)	1200 mg, in 2 doses	41.63
Lovastatin - *Mevacor* (MSD)	20 mg, single or divided	46.88
Neomycin - average generic price	500 mg qid	19.84
Niacin - average generic price	1 gram tid	7.91
Nicolar (Rorer)		58.82
Nico-400 (Jones Med)		50.92
Probucol - *Lorelco* (Merrell Dow)	500 mg bid	45.50

* Cost to the pharmacist for 30 days' treatment with usual daily dosages based on Average Wholesale Price listings in *Drug Topics Red Book*, 1988 and August *Update*; price to the patient will be higher.

CONCLUSION — Cholestyramine, colestipol and niacin have been proven effective for lowering elevated serum cholesterol concentrations, and they are generally safe. Gemfibrozil is well tolerated and also effective, but may cause an increased incidence of gallstones. For patients who cannot tolerate or do not respond to these drugs, lovastatin can be effective in lowering serum cholesterol, but its long-term safety is unknown.

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The Secularization of Health Affairs

WILLIAM L. KISSICK, M.D.

Summary

Medicine, in Western Civilization, traces its ancestry to the School of Hippocrates on the Isle of Cos in the 5th century B.C. Its history is intertwined with the Judeo-Christian ethic and manifests a significant ecclesiastical heritage. In the role of healer, the physician has a spiritual as well as a scientific character. Since World War II, health care has experienced vast changes in its cultural, economic, political, social, and technoscientific dimensions. This transition from the temple to the marketplace, characterized as *The Secularization of Health Affairs* has pervasive societal implications.

During the 1974-1975 academic year, I spent a sabbatical leave in London to study the reorganization underway of the British National Health Service; a tripartite organization of general practitioners, hospitals, and local health services that had stood in place, with minor adjustments, since the implementation of the 1946 Act of Parliament. Although the organization as a means would change, the original mandates expressed in the Preamble to the National Health Act (1946) still articulates the ends.

> It shall be the duty of the Minister of Health . . . to promote the establishment in Great Britain of a comprehensive health service designed to secure improvement in the physical and mental health of the people of Great Britain and the prevention, diagnosis and treatment of illness, . . .

As I interviewed civil servants, practitioners, health planners, academics, business executives, and patients about the National Health Service, I was often asked about the American health care system. On one occasion, when called upon to address the issue in a public forum, I observed that the British organize their health services the way we Americans play football—in precise patterns and plays—while we organize our health services the way they play rugby—with seemingly random interactions of players in search of the ball. At times, the purpose of playing the game—for the sport or the conquest—seemed equally dissimilar. My impression was confirmed in June 1981.

On the occasion of a return visit to London, I was invited to present a formal lecture on "Recent Developments in the American Health Care Enterprise." My audience of three dozen community physicians was enrolled in a postgraduate course sponsored by the Thames Consortium of University of London medical schools and hosted by the King's Fund College, an institution I had visited with some frequency during my sabbatical.

At that time, the American health care enterprise was BDRGs (before diagnosis-related groups). Health care cost escalation was rampant (18 percent per annum in the hospital sector) and five times the consumer price index over all. My discussion of health care financing gave prominence to deductibles, copayments, usual and customary fees, and negotiated discounts in search of cost containment. These specifics seemed quite foreign to the physicians in my audience, as did utilization review, second opinion, certificate of need, and the emerging concept of managed care. Health maintenance organizations, preferred provider organizations, multihospital systems, and joint ventures were perceived as incomprehensible bureaucratic pluralism. Although I had made considerable progress over the previous half dozen years explaining the British National Health Service to American audiences, I did not fare very well with the reciprocal assignment.

The English custom at such a lecture is for a designated representative of the audience to conclude the question and answer period following the lecture with an expression of appreciation for the lecturer's contribution. On this occasion, a young physician offered her peroration. She thanked me for my time, interest, and perspectives and concluded:

> It would appear, Professor Kissick, that while for you in the United States health care is a business, for us it is a religion.

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The ensuing silence invited reflection rather than rejoinder. Later when we adjourned, I suggested that her concluding statement, while compelling, was only partially correct. For us in the United States, health care is a religion, a charity, a social utility, a governmental responsibility, and a business. The continuum stretches from the spiritual to the secular. Our health care initiatives can be labeled with the alliteration of four Es—*entrepreneurial, elected, ecclesiastical,* and *eleemosynary*. For some, particularly veterans, health care is a right. For others it is an earned or negotiated benefit by virtue of employment. Some are dependent on the commitment of a religious order. More often than not, health care in the United States is a mixture of all of the above, though definitely not a societal right as in England.

From Temple to Marketplace

The ancestry of medicine and other health professions emerges from ecclesiastical traditions. The mythologic father of medicine is the demigod Aesculapius, the son of a mortal mother and Apollo, the son of Zeus. The Hippocratic Oath has its origin in his school on the Isle of Cos in the 5th century B.C. In the Middle Ages, nursing took place in abbeys, convents, monasteries, and hospices, with ministering to pilgrims and those in need. The Pennsylvania Hospital founded in Philadelphia by Benjamin Franklin in 1751 as the nation's first hospital has the classic Benjamin West mural, "Christ Healing the Sick in the Temple" as a centerpiece in the lobby. Faith and healing, unlike church and state, have no separation in our Constitution.

Our belief systems, patient and practitioner alike, have a faith in healing powers that transcends scientific or professional explanations. We take our belief systems for granted until challenged by institutional metamorphosis; wherein all the ground rules and expectations change. That change is more profound than Starr's *The Social Transformation of American Medicine* (1982). The *secularization of health affairs* implies cultural, economic, political, and technoscientific, as well as social change. If professional values are sacrificed to the forces of the marketplace, will health care become like every other commodity?

The pendulum, in swinging as Paul Starr argues from "sovereign profession" to "vast industry," may overswing the mark. If we lose sight of professional values and public accountability, the reaction or even backlash of society could go far beyond any prescriptions and restrictions experienced to date. The doctor-patient relationship, once a sacred trust and still considered a privileged communication in a court of law, is rapidly deteriorating into a commercial transaction between discount shoppers and "docs in a box."

The distinguished editor of the *New England Journal of Medicine,* Arnold S. Relman, M.D., launched a major national debate in September of 1980 when the *Journal* published his own special article, "The New Medical-Industrial Complex." Dr. Relman fears that such a medical-industrial complex will strike a critical blow to the doctor-patient relationship that, for many physicians, has the religious dimension of a sacred trust. This article may be used to mark the transition in health affairs from our society's efforts to build the predominantly voluntary infrastructure to the emergent competitive-regulatory eclecticism that has dominated the 1980s. Physician as advocate, physician as confessor, and physician as savior are themes familiar to all of us. Physician as stockholder or broker has other connotations.

Health Care Systems: Means and Ends

For almost two decades post-World War II, American society focused on investing in the development of a vast health care industry. Federal investments in biomedical research, construction of hospitals, and finally, the education and training of physicians, nurses, and other health personnel provided the basic resources for this vast industry. The 1960s and 1970s addressed financing and organization in an effort to realize cost-effective health services from these resources. The late 1980s finds the American health care enterprise accounting for total expenditures of almost one-half trillion dollars (11.3 percent of the gross national product). Unfortunately the overview reveals a plethora of means and a paucity of ends.

Pluralism in Search of Excellence

Among the large health care systems in the United States there are prototypes for each of the ecclesiastical, eleemosynary, elected, and entrepreneurial types. The Sisters of Mercy Health Corporation (1986), the second largest religious, centrally managed, multihospital system, had revenues of $1.2 billion and a surplus of revenue over expenditures of $29 million for the year ending June 1986. The Appalachian Regional Hospitals (1986), a voluntary health care system, earned $618 thousand on revenues of $133 million in 1986. The Hospital Corporation of America (1972), the largest investor-owned multihospital system in the country, earned $175 million in 1986 on a $4.9 billion revenue. The Department of Medicine and Surgery of the Veterans Administration (1986) is a mini National Health Service with a budget of $9.4 billion from the federal government. Thus, assuming that each system follows standardized accounting practices, does "The New Medical-Industrial Complex" boil down to how well the books balance at the end of the fiscal year? What of values, mission, and priorities?

What is realized for the resources expended? The management sophistication, knowledge base, and procedures are comparable; each has access to the same literature and is free to recruit the products of our several educational programs in health care administration. Does it all reduce to access to capital? Are we considering tax-free bond markets versus equity markets in lieu of patients' rights and quality health care? Have we administrators become so enamored with the means that we have lost sight of the ends? Is this what the English physician was telling me?

Quo Vadis the Health Care Enterprise

The British National Health Service is guided by the Preamble of the National Health Act of 1946. Further, a set of principles was adopted with its 1974 reorganization in an effort to reallocate funds to the so-called Cinderella services: the care of the mentally retarded, physically disabled, mentally ill, and elderly. These decisions are political at the highest level and the efforts at implementation are derivative. In our society, the national goals, when they can be perceived, are an agglomeration of individual institutional goals and objectives. The British ration up front while we deny rationing, seek donor organs on the "Phil Donahue" show, and treat 37 million disenfranchised with rhetoric in lieu of health services.

During the heyday of the Great Society we struggled to conceptualize the multitiered, pluralistic, abundant, and energetic American health care enterprise in terms of goals and objectives. The Preamble of Public Law 89-749 (1966), *The Partnership for Health* states:

> The Congress declares that fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment, which contributes to healthful individual and family living . . .

The year Medicare was implemented we invested approximately $42 billion, one-quarter in the public sector. Only a few million dollars were devoted to realizing progress toward goals and objectives developed within this mission. I do not wish to imply that our initiatives were coordinated, or for that matter that we all agreed on priorities and alternative strategies. We did, however, share a sense of direction and mission that reflected the Preamble to the Partnership for Health. Most importantly, we aspired to a health care enterprise in which the whole surpassed the sum of its parts. I suspect that two decades of effort have achieved the reciprocal.

Values and Goals

What are the goals and objectives of our ecclesiastical, eleemosynary, elected, and entrepreneurial institutions in health care today? Dr. Edmund Pellegrino (1987), the John Carroll Professor of Medicine and Medical Humanities at Georgetown University and Director of the Joseph and Rose Kennedy Institute of Ethics, suggests that the pluralism in our society precludes a consensus on values in health care. He advocates the declaration of values up front by the physician or provider institution so the consumer could choose.

The dilemma of health care is faced by every society, no matter how wealthy. For the physician, no cost is too great to save a human life or to treat disease. For society, resources are by definition limited and choices must be made. Victor Fuchs (1974), a leading health economist, has written of these social and ethical dilemmas in his book *Who Shall Live?* The question for the 1980s is "Who Shall Decide?" How are we to allocate increasingly limited resources among competing health care needs ranging from the 87-year old senile post-stroke widow in a nursing home to a one-pound premature infant on life-support systems in the intensive care unit of a children's hospital. The remaining 238 million of us, with our plethora of aches, pains, and acute and chronic illnesses are somewhere in the middle of that spectrum. Patients, now called clients or consumers, and health care professionals, now called providers, share a common goal: the highest level of health attainable for every individual. How do we allocate resources? Who shall decide?

Operational Values

We look to the mission statements of our four prototypes for evidence of operational values.

Sisters of Mercy Health Corporation

> Inspired by Christ Jesus and by the example of Catherine McAuley, we of Sisters of Mercy Health Corporation, participating in the healing mission of the Roman Catholic Church and mindful of our common bond with all persons of good will, affirm our commitment to serve our community—*especially* [emphasis added] the poor, the ill, the disabled (Sisters of Mercy Health Corporation 1986).

Applachian Regional Hospitals

1. Access to adequate health care is the right of all persons, and will be provided without any suggestion that ability to pay is a prerequisite to receiving service.
2. All human beings have intrinsic worth and dignity, and those whose life or activity is touched or affected will be treated with a recognition of personal worth.
3. Quality and excellence are fundamental attributes of service, and the highest standards will be observed in all activities and programs (Appalachian Regional Hospitals 1986).

Hospital Corporation of America

- To attain international leadership in the health care field
- To provide excellence in health care
- To improve the standards of health care in communities in which we operate
- To provide superior facilities and needed services to enable physicians to best serve the needs of their patients
- To generate measurable benefits for: The Company, The Medical Staff, The Employee, The Investor, and most importantly The Patient (Hospital Corporation of America 1986).

Veterans Administration Department of Medicine and Surgery

> The Mission of the Veterans Administration is to serve America's veterans and their families with dignity and compassion and to be their principal advocate in insuring that *they* receive the care, support,

> and recognition *earned* [emphasis added] in service to this nation (Veterans Administration Department of Medicine and Surgery 1986).

I think you will agree that the Sisters of Mercy speak compassion, the Appalachian Regional Hospitals are committed, the Hospital Corporation of America challenges the competition, and the Veterans Administration promises justice for all.

Thomas Watson, Jr., of IBM is quoted by Peters and Waterman (1982) in their best-selling book *In Search of Excellence:*

> The basic philosophy of an organization has far more to do with its achievements than do technology or economic resources, organizational structure, innovation, and timing.

What of the basic philosophy of our prototypes? If you were led blindfolded to a bedside in each institution and talked with a patient, a nurse, and an attending physician, could you tell the difference? Is the bottom line at the bedside, in the examining room, in home care with a terminally ill patient, or in the lower right-hand corner of the auditor's statement published in the fiscal report? Moreover, how will deficiencies in patient care be reflected in the annual report?

Management: The Mean Toward Ends

Institutional management and health care prior to World War II was predominantly an extension of clinical responsibility with a nurse or a physician assuming administrative chores. Professional hospital administration was introduced to the scene by the University of Chicago in the 1930s. Initially empirical in the transmission of lessons learned from experience, a profession with its body of knowledge began to emerge. The scope of concerns and perspectives can be indicated by the diversity of host institutions—schools of public health, business schools, programs in public administration, schools of medicine, and graduate schools. Gradually, over the years such disciplines as biostatistics, epidemiology, accounting, finance, economics, operations research, and the social sciences were added. Because the programs experienced increasing difficulties in encompassing all the material within the curriculum, the programs evolved from one year plus a one-year residency to two academic years with a three-month residency during the intervening summer. Now several universities offer a three-year program combining the MPH and MBA degrees.

Developments in Management Practice

Meanwhile in practice, we have witnessed the evolution of the hospital administrator into the role of chief executive officer with the title of president rather than director or administrator. Some observers suggest that this is further evidence of the ascendancy of the business over the professional dimensions of health care.

I would like to suggest a further implication of this trend. In the corporate world, the CEO is selected by the board of directors to address the needs and priorities of the organization specific to a certain point in time. Accordingly, men and women of various disciplinary orientations are selected to be CEO at different stages in the life of the organization. At one point a CEO with a background in finance may be desirable while at other times operations or marketing skills may be preferred, or planning or research and development expertise may best fit the organization's needs.

Scenario for the Future

Management Development. The contrast between health care and the corporate world could not be more dramatic than in management development. Today's graduates in health care administration will start in beginning positions and will probably move from organization to organization as they ascend the career ladder. Their classmates who have majored in finance, marketing, and management who are recruited by IBM, General Electric, or Proctor and Gamble will spend three to five years in a management development position that could be likened to a medical residency with shorter hours and better pay. Martin Meyerson, President Emeritus of the University of Pennsylvania, has conducted a study of educational programs in *Fortune* 500 corporations and informs me that AT&T, IBM, and General Motors each spend more on education and human resource development annually than the combined educational budgets of the eight Ivy League universities.

By comparison, the health labor force is three times the combined employment of such companies. We of course are dispersed through small institutions, a fact that challenges career development and continuing educational programs. The increasing merger of institutions and concentration of resources into larger delivery systems will both mandate and facilitate management development programs.

The Art of Japanese Management. One of the characteristics of Japanese management is that the manager, rather than pursue career development exclusively in say, marketing or finance, rotates through the entire spectrum of disciplines within the organization enroute to becoming a chief executive officer. The Japanese CEO's career is most likely to focus on personnel, a concentration rarely observed in American CEOs. The United States' health care industry is, as we all know, labor intensive with a labor force of six million. A stronger emphasis on personnel management would appear to be a paramount concern.

Health Professions in Management. I suspect that we may be coming full circle in health care administration with the reemergence of the nurse and the physician in roles on institutional leadership (Hillman et al, 1986). The synthesis of the health sciences and the management sciences is less than optimal in any educational program. Increasingly, the health sciences appear in my opinion to be even more critical in the era of DRGs, product line management, alternative delivery systems, and rationing medical care. A third of the MBA candidates in our graduate program in health care administration are physicians, nurses, or other health professionals.

From Management to Political Models. I perceive for the future a transition from the management model to the political model of health care institutional leadership. The CEO will be less a president and more a prime minister, leading multiple constituents and fully recognizing that in addition to electoral renewal by the board one must be ever ready to win a vote of confidence among one's peers.

The American corporation is evolving. Accountability has classically been to the shareholder through the board of directors. Increasingly the management literature refers to the "stakeholders" to imply that there are other vested interests besides those who own stock in the corporation. "Stakeholders" include management, labor, customers, suppliers, community, and government. Note that the Hospital Corporation of America mission statement concludes with an itemization of its stakeholders. The needs and expectations of these diverse "stakeholders" have resulted in the need for CEOs to focus increasingly on the outside environment.

The stakeholders of health care systems are diverse and powerful. Moreover such factors as the evolution of corporate involvement in third-party prepayment, development of health maintenance organizations, and consumer choice strategies will place the health care CEO in the role of prime minister presiding over a very diverse political constituency. The corporate art form of creative accounting will have less utility than the political skills of communication, negotiation, and persuasion.

Ecclesiastical and Secular Pluralism in Health Care Missions

The secularization of health affairs has stripped ecclesiastical trappings of authority and prerogative from physicians. From deity to Marcus Welby to mere mortal in less than a generation is a steep fall from grace. The implications for the roles of the healer, therapeutic options, and client confidence are enormous. The level of malpractice actions may well be one of the major symptoms of this profound social, cultural, economic, and political transition.

Another consequence of enormous proportions is the loss of cross-subsidization in the financing of health care. The sliding scale of fees for the physician and the collection of charges by hospitals financed "Robin Hood" health care with significant implications for the individual and the institutional provider. The near spiritual commitment of the physician and the eleemosynary tradition of the community hospital with its fiduciary trust, prompted society to condone these special economic prerogatives. Once Medicare and Medicaid substituted a public payment for a sacred trust the die was cast. Now the issues of equity, efficiency, and excellence must be debated in the open secular and political arena. Approximately 37 million uninsured wait for the issues to be joined.

The 1990s may be the decade of closure in health care systems. The social justice, compassion, and healing that characterizes the Judeo-Christian ethic and the means of management will be challenged as never before. We must design an effective and equitable health care enterprise. How shall we decide? What shall we decide? If not now, when? This is the new bottom line secondary to the secularization of health affairs.

Note

This article was adapted from the Third Annual Clifton C. Thorne Lecture delivered at the 1985 Clifton C. Thorne Dinner and Award Ceremonies, Health Policy and Administration Consortium of the Capital Area, State University of New York, Albany, 6 February 1985.

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News of M.D. Health Plan

ROBERT J. BRUNELL

MDHP OFFERS TWO-YEAR RATE GUARANTEE TO PARTICIPATING M.D.'s ONLY

During a period when rates for other health care coverage are expected to increase by 20% to 50%, M.D. Health Plan is now offering, only to its own participating physicians and their staffs, a two-year rate guarantee beginning 1 December 1988, and limiting any rate increase for 1990 coverage to the increase in the medical cost component of the Consumer Price index. The offer applies not only to MDHP's present 1700 participating physician/investors, but also to those who will become participating physicians during the current offering period for M.D. Enterprises of Connecticut stock, the new Prospectus for which was distributed earlier this month.

Making MDEC Pay Its Own Way

For a typical MDHP contract covering the office physician, family, and two or three office staffers and their families, the premium savings in most areas over two years will easily cover the $3,000 or $4,000 cost of investing in MDEC, as well as deliver more comprehensive coverage than any indemnity plan or alternative HMO.

Once again, M.D. Health Plan is proving to CSMS physicians that for them, *MDHP participation doesn't cost . . . It pays!* The program's rates are as follows:

SINGLE Coverage:	$ 95.72/Month
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FAMILY Coverage:	261.21/Month

Under this offer, depending on your current carrier and the number of contracts in your coverage group, your new MDEC stock can pay for itself in from eight to 18 months. To take advantage of this program now, just call MDHP at 1-800-345-9272, or in the New Haven calling area, 776-5759.

This special health benefits program is available only to participating physicians of M.D. Health Plan, and only during November and December of 1988.

DOWN COME FINANCIAL BARRIERS TO MDEC OWNERSHIP: LOC's, ENROLLMENT CREDITS

In response to the requests of many physicians in the primary specialties, the new stock sale permits physicians to defer payment for the required stock purchase. MDEC will accept their interest-free letters-of-credit/promissory notes in lieu of payment by check or by UBT unsecured bank loan.

Moreover, the new stock sale also offers the possibility of reduction in the purchase price by granting "enrollment credits" to be shared by purchasers of new MDEC stock in the thirteen regional "credit pools." The credits will be worth $1,500 for each ten additional MDHP enrollees, including those in the physician's own office, if they elect M.D. Health Plan coverage. The amount of price reduction per qualified physician investor will be rounded up to the nearest multiple of $250.

Given increased enrollment beyond currently projected levels reflecting the increased physician participation, such credits would be rebated to shareholders who have paid for their stock by check or bank loan. These credits would help to offset the obligation of those who had bought their MDEC shares by letters-of-credit. The new Prospectus, dated 24 October 1988, gives current projections for each enrollment pool, and the other details of this program, and is available from MDHP offices.

Meanwhile, all subscribers to Class A stock will have

ROBERT J. BRUNELL, M.A., Director of Scientific Activities, Connecticut State Medical Society.

full voting rights, regardless of method of payment. For information, forms, and assistance, physicians may call MDEC at 1-800-345-9272.

COUNTY ASSOCIATIONS COSPONSOR MDHP HOSPITAL MEETINGS; LOCAL PHYSICIAN SUPPORT GROWS

All eight County Medical Medical Associations and CSMS have agreed to cosponsor MDEC informational meetings scheduled at hospitals in each of the thirteen MDHP credit pool regions. In addition, a growing number of county and regional physician groups have issued endorsements for M.D. Health Plan participation. Among these organizations are:

+ Fairfield County Medical Association, which is also considering becoming a county CSMS-IPA chapter;

+ Hartford County Medical Association, whose "MDS" subsidiary is to receive CSMS-IPA county chapter status;

+ New Haven County Medical Association is considering forming a new subsidiary to become the CSMS-IPA county chapter;

+ Colonial IPA in New London County (CIPA);

+ Middlesex IPA;

+ Waterbury IPA (WIPA)

CSMS-IPA TO RETURN 100% of FIRST YEAR'S WITHHOLD; M.D. ENTERPRISES ISSUES STOCK DIVIDEND

On 30 September 1988, CSMS-IPA completed its first year of experience in the black, and will be returning 100% of fees withheld from the previous 12 months to the physician/investors who participate in M.D. Health Plan.

Also in September, the M.D. Enterprises of Connecticut Board approved a one-for-one stock dividend to shareholders then on record, to be issued in "B"stock during the coming two-month period. This has no tax consequence until such time in the future that redemption may be permitted under the terms of the bylaws of the corporation.

New MDEC Stock Sale in Progress: Company Growth on Target

Finally in October, the long-awaited MDEC Prospectus was declared effective, and the second stock offering initiated with its distribution to CSMS physicians. A letter from CSMS President Norm Zlotsky, M.D., celebrated the company's first year of remarkable growth to more than 7,000 enrollees, and its early diversification into the self-insured ChoicePlan program, giving CSMS-IPA physicians potential access to 40,000 enrollees not otherwise eligible for HMO coverage in the coming years.

Editorials

Safer Drug Use and AIDS

Does the public have an interest in promoting safer illicit drug use, that is, in promoting the health of those whom we have defined as criminals? People who use illicit drugs by injection are highly vulnerable to illness or death from violence, from overdosing, or from using contaminated materials. They experience a broad range of infections—particularly bacterial and viral—from failing to sterilize or even cleanse their injection equipment. Their needle and syringe may simply be dirty or may be freshly contaminated with infectious blood or other material from having been shared with other persons. The most salient of these shared infections from the current public health viewpoint are the human immunodeficiency virus (HIV) and hepatitis B. Both of these viruses are successfully transmitted by freshly contaminated injection equipment and both often lead to serious illness and death.

Is it in the public interest to reduce or preclude these infections?

Our society has, I believe, consistently offered health care and health promotion advice to those it considers criminal or immoral. We provide health care to prisoners, even to those convicted of capital crimes and sentenced to death. In many communities, we support, promote, or tolerate agencies that care for prostitutes, homosexuals, women seeking abortions, alcoholics, the nonworking poor, those who have attempted suicide, and others whom substantial segments of society consider to be immoral. In most American communities, overt promotion of infectious disease as a punishment would be perceived as abhorrent or at least inappropriate. A further consequence of the promotion of infection (or failing to move to reduce infection) is, of course, that others, so-called innocent people, will surely be exposed and infected, and will in many cases develop serious illnesses and perhaps die. Thus, it appears to me that the public has a major interest in reducing HIV and hepatitis B infection in those who use illicit drugs by injection. Their medical care will fall to us. It is our costly moral and ethical duty to provide such care. We will otherwise inevitably lose thousands of our fellow citizens —neighbors, friends, relatives, and loved ones among them. And they, in turn, will have infected many others. In terms of HIV in America, there can be no question that the major bridge from those who engage in high risk behavior to those who do not is through heterosexual contact with those who use illicit drugs or through vertical transmission from mother to fetus.

Almost every rational person will say that we should stop drug use altogether by stopping the drug industry, by teaching people not to use drugs, by making drugs too difficult or too expensive to obtain, by vigorous law enforcement, and or by helping people to stop using drugs and restoring them to the main stream of society. I am in favor of all of these options and shall discuss them elsewhere, but there is little evidence that we are prepared to make the commitment and investment of personnel and funds to achieve any of them. We do have the option of enhancing the likelihood of helping people stay alive and well until we are ready to invoke promising or effective long-term solutions.

One set of options involves health promotion in the form of outreach and education. Outreach and education must be credible and culturally appropriate. The people we would be seeking to help are accustomed to disdain, disrespect, and denunciation. They expect us to have a punishment agenda. They are alienated, distrusting, and have often developed or bought into countercultural values. But we can reach them with sincere and sensitive efforts. The basic messages would be to inform them of their risks and to try to motivate them to seek help and/or to protect their own health and the health of their sex or drug use partners and of their babies.

While it is certainly our duty to attempt to motivate people to seek help, we must also acknowledge that help is not always available. If we overemphasize that mission and successfully refer people to rehabilitation programs that cannot accommodate them, we risk generating a severe backlash. Our clients do not have the political voice to demand access. We are obligated to speak for them but meanwhile health promotion must rationally focus on safer drug use and safer sex practices. The messages are simple and clear and they have been fully articulated (but not effectively delivered) for several years. "Do not share your 'works' with anyone. If you must share, clean your needle and syringe before and after use with household bleach or with alcohol." Technical details are easily addressed. "If you are having vaginal or anal sex, protect yourself and your partner by using a condom." Again, technical details are easily addressed.

If society could support or tolerate those messages, HIV and hepatitis B transmission among those who inject illicit drugs could be stopped.

What blocks success? We might not reach everyone. That is easily addressed by trying harder. Not everyone would believe us; some would not accept our advice. Presumably the educators' skills would improve, their sincerity would become apparent, and peer approval or even pressure would begin to help. Some people would forget or ignore advice in the heat of passion or in their quest for their relief from withdrawal. Of course that would happen but well-structured health promotion advice would help people plan for those occasions.

The principle obstacle is that the public does not support this sort of health promotion. It is seen as condoning drug use, coddling criminals, and encouraging promiscuity. Even more clearly, some prominent Americans seem to see HIV infection as an ally in eliminating the drug problem.

Does teaching people how to preserve their own health and life and the health and lives of those with whom they share drug injection equipment and of their spouses and future children condone drug use? I believe that we could open a dialogue on that subject when and if we are actually able to cure people of their addictions and succeed in helping them to alter their lives in ways that protect them from succumbing again. Until then, we have a clear duty to help them stay alive. Does teaching people how to stop an epidemic coddle criminals? I don't even know what that question means. And, finally, how does health promotion and risk reduction education promote promiscuity? Most people who use illicit drugs by injection are adults who have an established sex life—commonly monogamous marriage. Some are surely promiscuous. Few of these are people so sheltered from modern life as to be unaware of contraception, whether or not they practice it. How, in truth, could encouraging safer sex practices lead to promiscuity? Only, I believe, in the minds of those who would mandate total sexual abstinence for HIV infected persons and their sex partners. They would then presumably define as promiscuous any sexual expression even in the context of loving, stable, mature, and monogamous marriages. One must rightly ask, what can be the real agenda of those who demand abstinence? They must surely know that it can't be achieved. If we allow ourselves to dedicate our resources to projects that are so contrary to human experience, we shall fail to implement health promotion that will work.

In any event, effective outreach and education, effective health promotion is costly. It requires trained personnel and lots of commitment. It cannot be achieved with a few public service announcements. Appropriate investment, however, would be many times balanced or repaid by saved health care costs.

How then do we reach the goal of effective outreach and education? The clients have little political power. They are disliked and feared. On the whole we try our best to separate them from society. They are not always seen as worth saving.

The answer, I fear is a profound one that we will not arrive at easily or quickly. We will probably not implement effective health promotion and risk reduction programs for illicit drug users until society sees them not as degraded criminals but as fellow citizens in need of medical and social care and rehabilitation. Until we alter *our* perception of *them*, the epidemic will rage on and it may engulf *us* too.

Author's Note: My experience has been that almost everyone has strongly developed views about those who use illicit drugs, about the social aspects of the AIDS epidemic, and about an appropriate policy concerning the convergence of these two realms. I would greatly appreciate hearing from readers, for my own enlightenment and for the Mayor's Task Force on AIDS, in helping to develop policy for our state and for New Haven. In many ways, New Haven may represent a manageable microcosm for the development of effective health promotion policy. Equivalent problems will almost surely arise in every American city. Please share your views, either with me or with *Connecticut Medicine*.

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At Last, a Rational Way to Pay for Physicians' Services?

Change is the one constant in health care today. New technologies, emerging diseases, an aging population, economic and budgetary pressures, and just plain politics are exerting a profound effect on how we physicians care for our patients. Like life's passage, change is indifferent to whether one likes it or not.

If change cannot be avoided, at least it can be influenced by reason and goodwill. The American Medical Association (AMA) has attempted to do just that for the vexing question of how Medicare should pay for physicians' services. At least four years ago, the AMA concluded that change was coming in this area. New and often frightening "solutions" were being proposed to deal with what was fundamentally a budgetary problem: expenditures under Part B of Medicare for physicians' services were more than the federal government believed it could afford.

The Association's Board of Trustees and House of Delegates understood well the situation facing Medicare. They determined that a new Medicare schedule of payments, based on an appropriate relative value scale and incorporating the indemnity principle whereby the government decides how much to pay and the physician how much to charge, provided an acceptable alternative to such dubious schemes as diagnosis related groups for physician services and mandatory capitation.

The Association also concluded, after careful analysis, that such a new approach would be preferable to Medicare's increasingly distorted and controlled "customary, prevailing, and reasonable" payment system. Such recent developments as confusing and punitive maximum allowable actual charges and ad hoc "inherent reasonableness" payment reductions have only reinforced the conclusion that the customary, prevailing, and reasonable system is increasingly untenable. A new Medicare indemnity payment system holds out the promise to end much of the tinkering that has plagued Medicare physician payment in recent years.

The October 28 issue of JAMA presents a detailed review of the attempt by researchers at the Harvard School of Public Health, funded principally by the Health Care Financing Administration, to develop a "Resource-Based Relative Value Scale" (RBRVS).[1] The AMA was a subcontractor on the study. We trust that our participation was useful.

The AMA worked to ensure that the experiences of practicing physicians were accurately reflected in the RBRVS methodology and findings. Since the study's inception, AMA staff have provided advice on its methods and execution. We worked with the national specialty societies to coordinate nominations of the physicians who served on the project's Technical Consulting Groups. We also shared with the investigators data on practice costs and patterns from the AMA Socioeconomic Monitoring System. Finally, we provided a nationally representative sample of physicians from the AMA Physician Masterfile. Of course, the canons of scholarly research and the realities of this effort require that all praise and blame for the study's findings rest with the authors.

Contrary to what some commentators have alleged, we went into this study with our eyes open.[2] We have not wavered in our support for completing the study, or in our insistence that the AMA has no prior commitment to support its results or implementation.

From the outset, we had no preconceived notions about how the results should come out. The AMA position was that the customary, prevailing, and reasonable system was flawed and distorted across the board, that resource costs provided a better foundation for physician payments, and that a new relative value scale based on these costs should be developed. We wanted to conduct this study ourselves, working with the specialty societies. Unfortunately, legal and practical barriers prevented this approach. We concluded that the Harvard team, which had developed the RBRVS approach, was one with which we could cooperate. The investigators have been responsive to criticisms and suggestions, delaying their final report pending further study, verification of data, and incorporation of suggestions made at a March 1988 consultative conference on the RBRVS. Physician input has been extensive. Nearly 2000 physician survey respondents provided the basic data for the RBRVS and 14 Technical Consulting Groups provided critical advice and guidance as the study unfolded.[1]

The focus on the RBRVS should now shift to two tasks. First, there must be external review and validation of the study's credibility, reliability, and validity. No less important will be the consideration of whether and how this academic research should be translated into the cold, hard realities of Medicare policy. The medical profession must and will assume a leading role in both of these endeavors. The AMA intends to work closely with specialty societies and state medical associations as it evaluates the RBRVS. It will provide medicine's perspective to the Physician Payment Review Commission, the Health Care Financing Administration, and the Congress as they carefully weigh the RBRVS findings published in JAMA and elsewhere, as well as the nearly 2000-page final report. Working together, we will attempt to identify the strengths and weaknesses in the study's conclusions, assess their relative importance, and seek modifications where necessary.

The authors do identify several areas where further analysis is necessary before the RBRVS can be translated into policy. Most prominent is the accuracy with which practice costs were included in their model.[3,4] Interested readers will note other topics that require more careful examination. These include measurement of resource costs for "evaluation and management" services,[5] assessment of preservice and postservice time,[6] and the national Medicare charge data used for extrapolation.[7]

The reliability and validity of the study's results should, of course, play a critical role in determining whether the RBRVS should be implemented. In addition, however, other issues must be considered. Foremost is the potential effect on patients and their physicians. *A new Medicare payment system based on an RBRVS will bring change.*[4] Relative and absolute payments by Medicare will shift across types of services and across specialties. Some of these shifts may be substantial, and the AMA takes them extremely seriously.

The Harvard investigators' research focuses on *relative* values. They contribute little to pending considerations about how the *dollar conversion factor* that translates relative values into absolute payments should be determined. The suggestion that explicit income guidelines could be used to determine actual payment levels must be rejected out of hand; the government has no business determining how much physicians should earn.

Professor Hsiao and his colleagues argue that relative values matter a great deal, and they do. The goal of this study is to produce relative values that approximate the relative prices of a well-functioning market for physician services. I will leave to my economist friends the assessment of how well the authors have done on this score. But as a surgeon who spent 22 years in private practice, I know well that actual dollar payments determined whether I could pay my employees, my mortgage, and my grocer. The fact that the RBRVS provides little guidance regarding actual payment levels has two major implications.

The first relates to the issue of budget limits. The authors conducted a simplified simulation of the implementation of the RBRVS for the 18 specialties studied, under the constraint of *budget neutrality*. In other words, no more (and no less) money is spent by Medicare on the services of these specialties; the pie is simply reallocated. Budget neutrality produces a dollar conversion factor by algebra, not rational analysis. *It can produce cuts at the specialty and service level that have no rationale other than budget neutrality.*

This is not to suggest that budget neutrality is not likely if an RBRVS is implemented. It is. Nor is it to imply that the relative values in the RBRVS are not important. They are. Rather, the point is that a conversion factor *could* be developed that focused on appropriate absolute payment levels, which take into account actual in addition to relative costs. Of course, the resulting "ideal" payment schedule might result in an increase in Medicare expenditures for physician services, but at least it would be the product of more than simple budgetary calculations.

As the conversion factor is based increasingly on budgetary imperatives and decreasingly on consideration of appropriate payment levels, policymakers will *need to be especially cautious about creating a new payment system in a manner that imposes substantial payment cuts on particular services, specialties, and types of physicians. Such cuts could have important negative implications for Medicare patient access.*

One final point about budget neutrality must be made. *A relative value scale can produce any level of payment for a given specialty or service; it all depends on the conversion factor.* The conversion factor, not the carefully developed relative value scale, is the ultimate determinant of whether payments for particular services increase or decrease. To use the RBRVS as an example: *Under a budget-neutral constraint,* to pay physicians for evaluation and management services based on the newly determined relative values would appear to require significant cuts in payment for many other services, regardless of whether these services are in some sense "overpriced" under the current system. Thus, if policymakers choose not to increase payments for evaluation and management services to the levels indicated by a budget-neutral RBRVS implementation, they must also moderate payment cuts by a like amount. To do otherwise would be to impose arbitrary hardships on patients and their physicians.

An arbitrary budget-driven conversion factor, in conjunction with other areas of imprecision in the RBRVS, broadens what statisticians would consider the "confidence intervals" under which an RBRVS can be appropriately converted into a fee schedule. That is, as our confidence in the correctness of a particular RBRVS-determined payment lessens, the range in which that payment can legitimately be established grows.

The second critical implication of absolute payments involves physicians' ability to bill their patients for the difference between what a third party is willing to pay and the physician's usual charges. No one should consider an RBRVS, which itself has no monetary meaning, as fulfilling the criteria necessary for a fixed fee schedule.

The RBRVS, like any other relative value scale, is based on averages. It uses estimates for average time, average total work, and average practice costs. It assigns values for the average patient. Have any of us ever met an average physician or an average patient? An RBRVS-based payment system cannot recognize differences among physicians in patient mix, quality, or practice costs. It cannot measure or place a value on experience, dexterity, or ambience. Nor can it account for local market conditions that affect access to care. These shortcomings are no indictment of the RBRVS; they are generic to any third-party payment system.

A properly working RBRVS-based fee schedule will require the flexibility that comes with physicians' ability to determine their own charges using RBRVS as a foundation. One of the most durable maxims to emerge from recent economic theory and experience is that rigid price regulations inevitably produce distortions that harm consumers and producers alike.

Two concluding points are in order. First, the RBRVS produced by the Harvard group will require considerable study and refinement before it is ready for implementation. Clearly, we are dealing with research. As yet, no one knows what the ultimate credibility or utility of the study will be. Both the Physician Payment Review Commission and the Health Care Financing Administration have announced plans to develop a new Medicare relative value scale. Although the Harvard study data are likely to play a major role in their efforts, other considerations, including potential impacts on beneficiaries and physicians, will enter into their development. In addition, a transition period for implementation of any relative value scale is probable. Second, practice patterns are likely to continue their rapid pace of change during the next several years. *Thus, the budget-neutral simulations with assignment of dollar values to services presented by Professor Hsiao and his associates should not by any means be regarded as definitive.*

Finally, a serious caution. No one, least of all payers, should expect an RBRVS to—in and of itself—control or reduce health care expenditures. An RBRVS will simplify and rationalize physician payment. If it is implemented as part of an indemnity system, its simplicity will enable market forces to work their magic, helping to restrain both patient demand and physician charges.

At the same time, the AMA recognizes that controlling expenditure increases will require a continuing focus on the volume and intensity of the services provided by physicians to patients. Efforts to increase the appropriateness and the effectiveness of medical care, and to restrain inappropriate patient demand, will make the multimillion-dollar RBRVS project pale by comparison. The AMA will be in the forefront of efforts to evaluate the RBRVS and to develop parameters of quality care. These decisions will not be made parochially or politically, but in the best interests of our patients. With a genuine sense of restraint and responsibility, the medical profession must respond to the RBRVS experiment in a manner worthy of our profession.

James S. Todd, M.D.

American Medical Association
Chicago

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The President's Page

Medicine in the 1980s

A recent survey by the American Medical Association of Public Opinion on Health Care Issues gives us some food for thought. Of 1,500 respondents, over half do not think that their physicians involved them enough in treatment decisions. Thirty-five percent feel we are arrogant and act as if we were better than other people. Sixty percent feel we are doing only a poor to fair job of identifying and dealing with impaired physicians. Most disturbing is that two thirds of the respondents feel that their doctors' fees are unreasonable. We rank fourth behind entertainers, athletes, and corporate executives in being considered as "paid too much for the contribution we make to society."

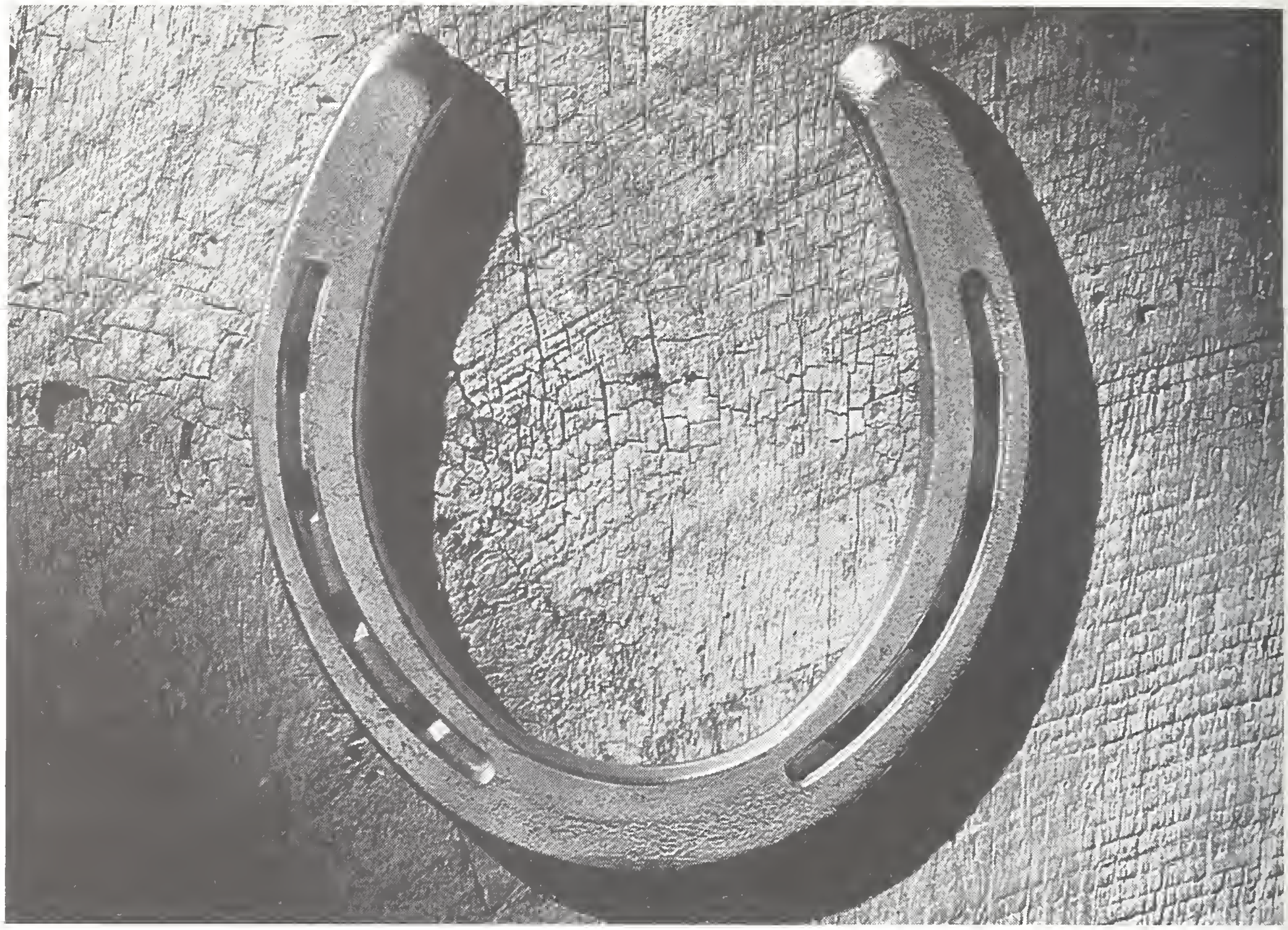
The other side of the coin can be gleaned from the 1988 Jobs Related Almanac. Out of 250 jobs ranked top to bottom, surgeons are in the bottom ten, and, in relation to stress of job, only astronauts, Indy drivers, and firefighters are ranked lower. Overall, hospital administrators are considered to have a more desirable job. We fall as surgeons somewhere below ticket agents, furniture upholsterers, and podiatrists. Medical school applications have dropped from over 40,000 in 1977 to about 28,000 in 1987. While the experts in the recent past have been worrying about a doctor glut, the real worry now is whether our society is about to reduce us to a less learned and less professional group of business tradesmen.

What can we do about it? We must band together and put our best professional foot forward. The threat of suit for monopolistic practices must be subordinated to the threat of lowering the quality of health care for our patients. We must continue to strive for excellence and to be our patients' advocates so that they *understand* we are providing realistic and compassionate care. We must not become anxious and depressed. We must present medicine as an honorable profession worthy of the best students available. The physician portion of the AMA Survey I quoted above also shows that 70% of physicians feel patients are demanding more. This demystification and informed consumerism can lead to physician discomfort frequently perceived by patients as arrogance. We must learn to communicate better. After all, human failing and maloccurrences are not deliberate malfeasance that should be considered as malpractice. The AMA Survey shows that 75% of the public believe physicians are not treated fairly in the court's handling of medical liability cases.

We must help our patients to understand the costs of medical practice—costs of education, employees, insurance, and equipment—while still maintaining patient advocate status. We must better publicize how much charity work is still done for the under- and uninsured. This should not be a hidden line item under "write offs" on a balance sheet. We must let the public know what we do and be advocates for providing health care for all who need it.

If we maintain our professional standards and work as advocates in our own cause, we can overcome many of the negative forces arrayed against us. It is only by maintaining those professional ideals that we can avoid becoming the cynical group of businessmen the public perceives us to be.

Norman A. Zlotsky, M.D.
President



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Reflections on Medicine

The Hospitals' Problem-Oriented Record

ROBERT U. MASSEY, M.D.

At a recent meeting for administrators, staff, and trustees, Connecticut hospital leaders were asked "what are our most vexing problems and what can we, or they, do to fix them?" That list of problems has changed significantly from year to year, waxing but never waning, often breeding a dreary prodigy and effectively preventing administrators, nursing supervisors, and chiefs of staff from paying attention to what their real work is all about.

This succession of problems, maddeningly different from year to year, is the most salient symptom of a system in transition and confusion; there was little doubt among the participants at this conference that government had been the major destabilizer with its vacillating policies of regulation, competition, and price control, as well as its failure to pay its bills. The aphorism that no man's property is secure when the legislators are in session pertains quite literally to hospitals.

I recall hearing several years ago from a business school faculty member that the distribution of goods and services can be accomplished either by competition in a free market or by central control through regulation, but that you can't have it both ways. He was of course wrong: you can, and we do, or at least the hospital people believe that they are being asked to care for the poor, compete, endure price fixing, raise nurses' salaries to decent levels, and submit to mountains of regulations, while all the while being accused of behaving selfishly, callously, venally, and negligently.

Although in this discussion among hospital leaders there was a serious effort to find some common thread or theme to account for the present untidiness, the effort was futile. Some ascribed the hospitals' plight to the fragmentation and uneven quality of services; others to lack of dedication of the professional staffs, an increasing self-interest and a declining sense of moral responsibility; for others it was uncertainty about who was running things—the Business Coalition, the Commission, the insurance companies, the state, or the federal government; one or two blamed the rapid rise in costs, especially the cost of technology and perhaps its thoughtless overuse; another said the main problem was the nursing shortage; another claimed that it was the surfeit of clinical and financial information that must be handled in the modern hospital; two or three thought that public expectations had gone far beyond the hospitals' capacity to respond; several noted that quality and accessibility were on a collision course with costs, and that none of our political masters had quite decided who was going to pay or from whom they would get the money; a few thought that boards of trustees no longer directed the life and work of hospitals in favor of patients but rather went along with the temper of the times, falling into narrow self-interest. All were sincere in their assertion that the only guiding interest for hospitals ought to be the care of patients, and all seemed to agree that we, hospitals and doctors alike, had been driven to err and stray from our ways like lost sheep.

Curiously, while most discussants observed that government, politicians and bureaucrats alike, were to be blamed for the bulk of the mess, more than you might have thought suggested that only government had the means to fix it; paradoxically the answer may lie, they said, in the adoption of some form of national insurance as a way to simplify an incomprehensible and ridiculously complex payment system, and as a way to compel government to face up to its fair share of the costs. Two years ago several in this same group said that the matter of national health insurance was as dead as a door nail.

Somewhere in *War and Peace* Tolstoy writes that the great decisions of history are never made by individuals or general staffs, nor by governments and powerful leaders, but rather through the millions of choices made by ordinary people in the course of their everyday lives; by such means the flow of history becomes an irresistible river, in its twists and turns never entirely comprehensible. Perhaps our professional leaders, both in medicine and in the hospitals, know intuitively that this is so and therefore hope and trust that all will finally end well; the patients who use our hospitals and for whom they were built are the ones who will tell us how these public trusts should be run and to what purpose; our job is to work with them for they are allies in a common cause.

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Withholding Artificial Nutrition and Hydration in Connecticut

The Case of Carol McConnell

JOSEPH M. HEALEY

IT is a sad irony in this era of medical power which has brought so many blessings to those who are sick that many patients nonetheless are afraid that they will be either overtreated or undertreated at that most critical point—the end of their lives. Recent attention to controlling health care costs and to allocating health resources has raised a question in the minds of some about whether they might ultimately be denied health care on some basis other than its potential benefit to them and their ability to pay for it, directly or indirectly. Recent attention to the continued use of medical interventions to prolong the dying process rather than to enhance the wellbeing of the dying patient has raised doubts in the minds of some about a prevailing "technological imperative" which somehow seems to require that treatment be provided even when the patient does not want it and even when it is providing no benefit to the patient. The challenge for our society is to address these concerns, real and perceived, by finding a compassionate middle ground which avoids the twin extremes of overtreatment and undertreatment and which is the basis for a public policy assuring that patients will receive *proper* care and treatment. One setting in which such a policy is now being formulated involves judicial review of cases examining conflicts about withholding and withdrawing artificial nutrition and hydration. This autumn, the Connecticut Supreme Court will hear oral arguments in the first appealed decision of a lower Connecticut court addressing these issues.[1] This case will allow the state Supreme Court to guide emerging Connecticut public policy by clarifying relevant legal boundaries and to join the many other courts around the country which have affirmed the central role of patient self-determination in the health care process.

Carol McConnell was injured in an automobile accident on January 18, 1985. She was brought to the emergency room of Danbury Hospital and has never regained consciousness. She was transferred to the Danbury Pavilion and has remained in a comatose state, unable to swallow, chew, or move spontaneously. She is reliant upon a gastrostomy tube for artificial nutrition and hydration. She is in a persistent vegetative state and there is no reasonable likelihood of her returning to a "cognitive, sapient state." Her entire immediate family, including her husband, appointed conservator by the Probate Court, and her three adult children, is seeking to advance her wish that she not be artificially sustained and that her death not be prolonged by heroic means. They assert, in her name, the common law and constitutional law rights of self-determination which they claim are not outweighed by any compelling state interest. Mrs. McConnell had been a nurse at Danbury Hospital since 1972 and had held positions in the operating room and the emergency room. In these contexts, Mrs. McConnell had first-hand experience of patients in persistent vegetative states. In describing her prior expression of how she wished to be treated, the trial court would eventually conclude that Mrs. McConnell "forcefully and without wavering, and in a position to make a well-informed choice, expressed a clear and convincing command that she not be artificially sustained, or her death be unduly or heroically prolonged."[1 (pp 7,8)] Among the objections of the various defendants to implementing the patient's wishes as expressed by her family was the claim that Connecticut's "Death with Dignity" statute[2] does not permit the removal of artifical nutrition and hydration because the patient in this case is not in a terminal condition as required by the statute.

The Superior Court for the Judicial District of Danbury, Judge Dranginis presiding, decided in favor of the McConnell family holding:

(1) that though there may be some instances in which the right to refuse medical treatment may have to yield to a compelling state interest supporting treatment, no state interest was compelling enough in this case to override Mrs. McConnell's right to refuse medical treatment; and
(2) that Connecticut's Death with Dignity Statute did not preclude the refusal of artificial nutrition and hydration for a patient in a persistent vegetative state who has expressed her wishes about such treatment.

Discussion of this case will continue in next month's column.

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2. Connecticut General Statutes Sec 19A-570 *et seq.*

Letter to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

M.D. HEALTH PLAN - A CONNECTICUT OPPORTUNITY

To the Editor: As a director, my association with M.D. Health Plan since its inception has been both gratifying and thought provoking. I have witnessed the Connecticut State Medical Society give birth to a new HMO, capitalized and thereby controlled solely by its participating members. The conception of this new entity has had to transcend state and county medical politics in order to establish a cohesive, effective statewide medical delivery system. As a newborn, M.D. Health Plan now requires a great deal of nurturing from its over 5,000 CSMS physician godparents if it is to grow successfully and mature in a hostile environment.

The impetus for M.D. Health Plan came from a realization that the Connecticut HMO marketplace was quickly becoming dominated by a few commercial interests. As a result, these interests increasingly dictated the quality and style of medical practice in our state. Rather than watch as hapless accomplices, the leadership of CSMS felt that we could counter this detrimental trend by putting forth our own HMO, thereby offering an alternative product for physicians to support. This physician-financed and physician-directed HMO, when successful, would set the standard for other HMOs to follow, lest they lose their physician providers.

Of course, it takes much time for a concept such as this to take form, gain support, and be capitalized (to say the least); indeed, much time has passed. Although M.D. Health Plan broke escrow last year, it is no secret that fuller capitalization is required to make a significant statewide impact. In fact, for reasons that seem very shortsighted, many CSMS physicians have still not bought into this strategy. Criticisms such as "you took too long getting started," "this plan favors specialists," and "$3,000 is too expensive (to invest in my future)" are still being heard in hospital hallways and medical society meetings.

As we look forward to a second stock offering to strengthen capitalization and physician participation, the qualities that we sought in a physician owned plan are underscored. The terms of the new offering would protect the interests of the initial investors while being sensitive and outreaching to those who have yet to join. The new offering recognizes the unique organizational and administrative contribution that local associations and local IPAs can make to the success of a statewide venture. The new offering comes at a time when the holding company, M.D. Enterprises Inc., has increased its scope with a contract from Stirling and Stirling to provide physician-managed health care services to 40,000 employees of self-insured Connecticut companies.

It is imperative at this time of growth and continued capitalization that we hold fast to the founding tenets that gave rise to M.D. Health Plan. Because, in order to be successful, in order to just survive in this highly competitive arena, we must play by all the rules and limitations by which the other HMOs live. We must not feel that M.D. Health Plan is just another HMO with onerous restrictions, but rather, M.D. Health Plan is an opportunity for us to win back a measure of control over the direction and quality of medical care in the State of Connecticut for our patients and for us.

Robert D. Rodner, M.D.
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Manchester, CT

AROUND THE STATE

American College of Physicians, Connecticut Chapter

The Connecticut Laureate Award of the American College of Physicians for 1988 was presented to Orpheus J. Bizzozero, Sr., M.D., F.A.C.P., Vincent A. De Luca, Jr., M.D., F.A.C.P., and Julius J. Sachs, M.D., F.A.C.P., at the Annual Scientific Meeting of the Connecticut Chapter on 21 October 1988 at Danbury Hospital. Dr. Bizzozero has practiced in Waterbury since 1946; Dr. De Luca in Derby since 1956; and Dr. Sachs in Hartford since 1951.

The annual scientific program of the chapter was the responsibility of the program committee: Matthew Miller, M.D., Jonathan Alexander, M.D., A. Jay Bollet, M.D., Claudia B. Gruss, M.D., and Paul B. Iannini, M.D., and included abstracts presented by Associates of the College (these will be printed in a future issue of *Connecticut Medicine*), as well as papers by Gerald L. Mandell, M.D., Lawrence S. Cohen, M.D., Helen L. Smits, M.D., Edwin C. Cadman, M.D., and John D. Melbourne, M.D.

Lyme Disease Seminar/Workshop

The Department of Health Services, Preventable Diseases Division, co-sponsored a seminar "Lyme Disease: Educating the Professional and the General Public" at Groton, 18 and 19 October 1988.

Other sponsors were The Lyme Disease Awareness Task Force of the Connecticut Chapter of the Arthritis Foundation, and Pfizer Central Research. Margaret Anderson of the Department of Immunology and Infectious Diseases, Pfizer Central Research, was program coordinator.

A major emphasis of the program was on the need to increase the awareness of both physicians and the general public of the nature and protean manifestations of this disease, and of the need to report cases to the Department of Health.

From the Executive Director's Office

COUNCIL MEETING

Thursday, September 15, 1988

Attendance

Present in addition to the Chairman Dr. Guy W. Van Syckle and Vice Chairman Dr. Joseph C. Czarsty were Drs. Ahamed, Beck, Blum, Bobruff, Bonner, Chmieleski, Dardick, Eslami, Fox, Freedman, Ill, McDonnell, Orphanos, Petrie, Robbins, Rose, Rubin, Sosa, Villa, Welch, Wetstone, Whalen, Jr., Zanker, Zeppieri and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Sullivan, Mr. Staples, Mr. Tomat (FCMA), Mr. Coffey and Ms. DeLauro (HCMA), and Mrs. Reed (President, Auxiliary).

Absent were: Drs. Abbot, Hollister, Jr., Kamens, Kaufmann, O'Brien, Reyelt, Jr., Sadowski, Schwartz and Upham.

Reports of Physicians Serving on State and Federal Agencies

Dr. Roger Beck reported on his meeting with leaders of the Connecticut Nurses' Association in regard to their concerns about the AMA Registered Care Technologist proposal. The meeting resulted in useful, constructive discussion which confirmed the common goal of quality patient care. The nurses' were informed that only pilot RCT projects are planned and that meetings among the AMA and ANA and others at the national level will continue. The concerns of the nurses were expressed—that additional categories of caregivers were not needed and that further fragmentation of nursing service was not in the best interest of good patient care, and that the nursing profession was responding to the need effectively in a variety of ways (e.g., the Patient Care Assistant Program at Hartford Hospital). The issues will be discussed further at a future State Joint Practice Committee meeting. It was VOTED to accept Dr. Beck's report as information.

Report of the President

Dr. Zlotsky reported on the following items:

Residency Programs—In reply to a letter he received from the Fairfield County Medical Association (Agenda Item No. 13) concerning the residency programs in the State of Connecticut in anticipation of any legislation that might be introduced in the 1989 session of the General Assembly, it was reported that the subject had been discussed thoroughly at the Legislative Forum held earlier in the day. It is proposed that members of the Hospital Medical Staff Section and Resident Section will meet to develop a position paper to present to the Task Force when it meets later in the fall.

Laboratory Regulations—A meeting was held at the Public Health Department of an Ad Hoc Committee on Laboratory Regulations for personnel, and it is believed that in time, these regulations could significantly affect physicians' offices where lab work is done. There will probably be some attempt to standardize the type of technician doing lab work in physician's offices and develop a level of training and experience equal to personnel in clinical laboratories in the hospital. Physicians doing their own lab work would be exempt from any regulations.

Nurses—Dr. Zlotsky stated that he and Dr. Beck had attended the meeting with the leaders of the Nurses' Association and reported that there was an amicable conclusion to the meeting and that the nurses agreed to use the CSMS/CNA Joint Practice Committee to discuss various possible ways of covering the shortage of nursing personnel.

M.D. Health Plan—The SEC approval of the new stock offering is still not complete. As of September 1, there were 6,200 members of the HMO and almost 1,000 members in "ChoicePlan," the joint venture with Stirling and Stirling.

Report of the Executive Director

Tim Norbeck reported on the following items:

AMPAC Board—It has come to the attention of CSMS that there is a vacancy in the AMPAC Board and it had been suggested that Stewart Petrie, M.D. might be willing to be a candidate for this post. Dr. Petrie has indicated that he would be willing to accept this nomination although he realizes that there is no guarantee that he will be selected. Since COMPAC has been steadily increasing its membership, it is quite possible that a nominee from Connecticut might be appointed. It was VOTED that Dr. Petrie be nominated for this post.

Conference on Gaps in Health Care—Senator Christopher Dodd convened a conference at Yale on September 6 on the subject, Gaps in Health Care. Panelists included Congresswoman Barbara Kennelly; State Representative Paul Gionfriddo; Congressman Bruce Morrison; President of Yale-New Haven Hospital, Thomas Smith; President of Blue Cross-Blue Shield, John Croweak; Representative of Travelers Insurance, Peter Libassi; and Executive Vice-President of St. Raphael's, Norman Marieb, M.D. They talked mainly of the need for providing insurance for 37 million uninsured people in the United States, (258,000 in Connecticut) and the problems caused by chronic underfunding of the Medicare program and its adverse impact on hospitals. The recently passed catastrophic insurance plan for the elderly which was passed by Congress recenlty was assailed by Congresswoman Barbara Kennelly as not addressing the long-term care problem, and she felt it was a poor solution to a difficult problem. Dr. Marieb acknowledges the liability problem of hospitals and physicians and the excessive costs. He further discussed the AIDS problem stating that 540 Connecticut residents have died. The conference did not shed much light on solutions to the problem, but basically reiterated health care problems which are known to exist.

Nominations—CPRO Board

The Council was requested to submit six names to the CPRO Nominating Committee from which three directors will be selected. It was VOTED to submit the following names: Daniel J. Doctor, M.D., Westport, Mehdi S. Eslami, M.D., Waterbury, Paul H. Deutsch, M.D., Norwich, Jan J. Akus, M.D., Norwich, Rakesh Anand, M.D., Bridgeport, and Jonathan G. Greenwald, M.D., Norwalk.

CSMS and Unions

A motion "That the Connecticut State Medical Society form a Section of Employed Physicians" was introduced by George Bonner, M.D. The charge of the Section would be to aid employed physicians in protecting their rights, but of more importance to protect the rights of patients they either directly cared for or those patients where care may be influenced by their physicians' decisions. Following discussion, it was VOTED to refer the concept of a Section on Employed Physicians to the Committee on Statewide Medical Planning for study and report back in 90 days.

It was further VOTED to appoint a committee to investigate feasible methods of preventing third party payors' intrusion into medical care.

CMMI Update

Dr. James P. Orphanos read a report, which was handed out to all members of the Council, outlining activities of the CMMI Board. Some of the highlights of the report were that physicians new to the practice of medicine in Connecticut received premium discounts. There was a rate increase which averaged out to approximately 8% on the first $1,000,000 of coverage based on an occurrence policy. (50% of that increase was a direct result of the Tax Reform Act of 1986 which taxed a portion of the reserves) and that full reinsurance coverage was obtained. The following two resolutions which had been approved by the CMMI Board were presented concerning the transfer of employees from CMMI to CMIC and are as follows:

(a) "Resolved that the Board of Directors of Connecticut Medical Management, Inc. authorize the transfer of the employees of CMMI to CMIC as of September 1, 1988 and besides employees, all other assets and expenses of CMMI be transferred to CMIC by September 1, 1988."

(b) "Resolved that CMMI Board of Directors on behalf of CMMI, advise Wiggin and Dana to draw up the papers necessary to effect such transfer.'

Mr. Terry Jones, legal counsel for CMMI, joined the Council to discuss these resolutions. Prolonged deliberations followed, which included the reasons for the actions taken, whether or not the CSMS had to ratify the actions taken by CMMI and what the relation would be between CMMI and CMIC. The prime reasons for the actions taken were the 7.5% service tax, (approximately $70.00 per subscriber) which would be avoided and also it would eliminate the requirement for CSMS and CMMI employees requirement to have compatible pension programs.

At this point it was VOTED to postpone action on the above resolutions (a) and (b) pending the outcome of the following action.

It was VOTED that the leadership of the CMMI, CMIC and CSMS meet prior to the next Council meeting to resolve the matter of the relationship between CSMS and CMIC.

The two resolutions which had been postponed were now acted on as follows:

Resolution (a) VOTED to approve with one abstention, Kenneth Robbins, M.D. Resolution (b) VOTED to approve with one abstention, Kenneth Robbins, M.D.

Committe on Physician Health

Dr. Edmund F. Hecklau, Greenwich, Chairman of the subject committee, joined the Council to discuss the Connecticut Impaired Physicians' Program and submitted several documents, which are distributed to the Council, outlining various types of programs in other states and recommendations concerning a Connecticut program. Following discussion, it was VOTED that a letter be sent to each of the county associations explaining the suggested program and requesting their opinions on the formation of a statewide program on impaired physicians.

M.D. Health Plan

Dr. Whalen reported that the SEC approval on the new issue of stock had been delayed and is expected by the end of September. He reported that M.D. Health Plan had reduced its administrative costs about $500,000 a year and that senior management had also been reduced. He expressed the appreciation and thanks of M.D. Health Plan Board to Dr. Kenneth Robbins and Mr. Brunell for their great contribution in the formation of the company. It was VOTED to accept the report as information.

Report of the Auxiliary

Joan Reed, President of the Auxiliary, reported that one of their prime concerns is increasing membership and they are trying to reactivate some of the county associations. She announced that an all-day conference on November 3rd will be held at the Ramada Inn, Meriden, the subject of which will be "Troubled Adolescents are Progressing". It was VOTED to receive the report as information.

Life Members

It was VOTED to receive as information the following list of Life members:

James T. Keegan, M.D., Milford (NH)
George E. Paley, M.D., Torrington (L)
Anson G. Stocking, M.D., Waterbury (NH)

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on September 15, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

IN MEMORIAM

BOYD, ROBERT E., Tufts, 1941. Dr. Boyd was a general practitioner in the New Haven area since 1946. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 29 August 1988 at the age of 73.

GORDON, GILBERT I., Columbia, 1947. Dr. Gordon was an internist in the Fairfield County area since 1949. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 14 May 1988 at the age of 64.

KEEFE, RAYMOND, University of Maryland, 1954, Dr. Keefe was a pediatrician in the Hartford County area since 1957. He was a member of the Hartford County Medical Society Association and the Connecticut State Medical Society; died 10 July 1988 at the age of 61.

MARSHAK, IRVING, Tufts, 1926. Dr. Marshak was a general practitioner in the New Haven area since 1926. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 4 July 1988 at the age of 86.

MESHKEN, JACOB, Rush, 1937. Dr. Meshken was a psychiatrist in the Fairfield County area since 1939. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 19 July 1988 at the age of 77.

MCCLOSKEY, EDWIN M., Jefferson, 1951. Dr. McCloskey was an anesthesiologist in the Hartford County areas since 1954. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 27 August 1988 at the age of 63.

MEYERS, ROYAL A., University of Michigan, 1931. Dr. Meyers was a general practitioner in the Litchfield County area since 1932. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 5 September 1988 at the age of 83.

WEBER, FREDERICK C., JR., John Hopkins, 1936. Dr. Weber was an internist in the Fairfield County area since 1940. He was a member of the Fairfield County Medical Association, past president of the Connecticut State Medical Society, and a member of the American Medical Association; died 15 September 1988 at the age of 77.

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Copy must be typewritten double-spaced on (8½ x 11-inch) heavyduty, white, bond paper. This requirement applies to all text elements: references, legends, footnotes, and others. Pages should be numbered consecutively. Authors should generally follow *JAMA* style or consult *Manual for Authors & Editors,* Seventh Edition, 1981, compiled for the AMA and published by Lange Medical Publications, Los Alto, California.

Titles and Author's Names

The first page of the manuscript should include (A) title of paper; (titles should be short, specific, clear, and amenable to indexing; (B) name of author(s), including first name(s) and with academic degree(s); (C) List hospital positions for each author and any institutional or other credits. If an author's present affiliation is different from the affiliation under which the work was done, both should be given. Include academic appointments when applicable.

Authors should express all measurements in Systēme International (SI) units, but they may include older conventional units in parentheses if they desire.

Abstracts

The second page should contain an abstract of not more than 150 words. This abstract should be factual, not descriptive, and should present the reason for the study, the main findings (give specific data if possible), and the principal conclusion. Do not include a summary.

References

The following minimum data should be typed double-spaced: names of all authors, complete title of the article cited, name of journal abbreviated according to *Index Medicus,* year of publication, volume number, and first and last page numbers. All references must be cited in the text. They should be arranged according to the order of citation, and not alphabetically. All references must be numbered consecutively. Numbered references to personal communications, unpublished data and "in preparation" are unacceptable. If absolutely essential, such material may be incorporated in the appropriate place in the text or as a footnote. Sample references are as follows:

1. Jones J: Necrotizing *Candida* esophagitis. *JAMA* 1980;244: 2190-2191.
2. Kremer H, Kellner E, Schierl W, et al: Ultrasonic diagnosis in infiltrative gastrointestinal diseases. *Dtsch Med Wochenschr* 1978;103 (June 9): 965-966. Abstracted, *JAMA* 1978;240:2784.
3. Influenza vaccine—recommendations of the Public Health Service Advisory Committee on Immunization Practices. *MMWR* 1979;28:231-238.
4. Fischer DH: *Growing Old in America.* New York, Oxford University Press, 1977, pp 210-216.

Tables

Data presented in tables should be self-explanatory and should supplement, not duplicate, the text or figures. Excessive tabular data are discouraged. Each table should be typed double spaced, including all headings, on separate sheets of 8½ x 11-inch paper. Oversize papers should not be used. Instead, repeat heads and stubs on a second sheet for tables requiring extra width. Number tables consecutively with respect to citation in the text. Each table must have a title.

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Figures should be professionally drawn and photographed, if possible. Glossy, clear black and white photographs should be submitted.

Line drawings, graphs and charts should be done in India ink on high-grade white drawing paper. Lines should be examined for evenness, breaks, and proper alignment. Lettering and symbols should be clear and of even density throughout. Symbols, lettering, and numbering should be of such proportioned size that when the figure is reduced to *Journal* column width (8 cm) each item will be distinctly recognizable.

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CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

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Part-time physician needed for sexually transmitted diseases clinics and international travel clinics at the New Haven Health Department. Call the Medical Director at 787-8184, or send resume to: The New Haven Health Department, c/o Medical Director, One State St., New Haven, CT 06511.

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PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

INTERNAL MEDICINE

July '89. Age 28. Licensed in Connecticut. Nat'l bds. FLEX. AB elig. MD, St. George's University, Granada; Int. and Res., Mt. Sinai Hospital, Hartford, CT. Prefers group type practice. Write, Jeffrey H. Katz, M.D., 7 Cypress Trail, Farmington, CT 06032.

INTERNAL MEDICINE (CONT.)

Aug. '89. Age 32. Presently in practice. Nat'l bds. AB cert. MD, New Jersey Medical School, Newark, NJ; Int. and Res., University of Wisconsin Hospital, Madison, WS. Prefers solo, group or associate type practice in a small to medium-sized community. Write Gregory Neilley, M.D., 81 Charles St., Annapolis, MD 21401.

Pulmonary. July '89. Age 34. Nat'l bds. AB cert. MD, University of Virginia, Charlottesville, VA; Int., University of Alabama Birmingham, Birmingham, AL; Res., University of Virginia; Fellowship, University of Rochester Medical Center, Rochester, NY. Prefers groups practice in a small to medium-sized community. Write, Lee Monroe Duke, II, M.D., 8 Kenicott Circle, Fairport, NY 14450.

OBSTETRICS & GYNECOLOGY

Aug. '89. Age 33. Licensed in Connecticut. Presently in practice. Nat'l bds. AB cert. MD, Georgetown University, Washington, DC; Int. and Res., Wilford Hall USAF Medical Center, Lackland Air Force Base, San Antonio, TX. Prefers general OB/GYN group practice in a medium to large-sized community. Write, Clare F. Ventre, M.D., 5901 Mt. Eagle Dr., #1016, Alexandria, VA 22303.

ORTHOPAEDIC SURGERY

July '89. Age 30. Nat'l bds. AB elig. MD, University of Connecticut, Farmington, CT; Int. and Res., Long Island Jewish Hospital, Long Island, NY; Fellowship, A.I. DuPont Institute. Prefers group type practice in a medium to large-sized community. Write, Mark A. Rieger, M.D., 3103 Acadia St., Wilmington, DE 19804.

July '89. Age 30. Nat'l bds. AB elig. MD, Georgetown University School of Medicine, Washington, D.C.; Int., North Shore University Hospital; Res., St. Lukes/Roosevelt Hospital Center. Prefers solo, group or associate type practice in a small to medium-sized community. Write, Michael J. Fracchia, M.D., 448 Tenafly Rd., Tenafly, NJ 07670.

PEDIATRICS

Aug. '89. Age 28. Nat'l bds. AB elig. MD, State University of NY at Buffalo, Buffalo, NY; Int. and Res., Children's Hospital of the King's Daughters, Norfolk, VA. Prefers group type practice in a medium to large-sized coastal community. Write, Nicholas J. D'Avanzo, M.D., 5817 Waxhan CT., #102, Virginia Beach, VA 23462.

July '89. Age 28. Nat'l bds. AB elig. MD, Tufts University School of Medicine, Boston, MA: Int. and Res., University of Florida Hospital. Seeking general practice group exposure with close proximity to major referral centers. Write, Richard E. Frates, Jr., M.D., 7200 SW 8th Ave., #31, Gainesville, FL 32607.

PSYCHIATRY

June '89. Age 29. Licensed in Connecticut. Nat'l bds. AB elig. MD, New York Medical College, NY, NY; Int. and Res., Westchester County Medical Center, Valhalla, NY. No preference to type of size of practice. Write, Craig S. Rogers, M.D., Westchester County Medical Center, Box 14, Valhalla, NY 10595.

June '89. Age 58. Licensed in Connecticut. AB elig. MD, V. Chervenkov Academy of Medicine, Sofia, Bulgaria; Int., General Hospitals, Gabrovo and Pernik, Bulgaria; Res., Medical Academy, Sofia and Western Missouri Mental Health Center, Kansas City, MO. Prefers group, associate or institutional type practice in a large-sized community. Write, Zhivko Daskalov, M.D., 120 E. 37th St., Apt. #4, Kansas City, MO 64111.

RADIOLOGY

July '89. Age 34. Presently in practice. Nat'l bds. AB cert. MD, Mount Sinai School of Medicine, New York, NY; Int., Jackson memorial Hospital, Miami, FL; Res., NYU Medical Center, New York, NY; Fellowship, Downstate Medical Center, Brooklyn, NY. Prefers group type practice in a large-sized community. Write, Ira Tyler, M.D., Apt. 6-A, 401 East 65th St., New York, NY 10021.

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Duodenal ulcer is a chronic, recurrent disease. While short-term treatment with sucralfate can result in complete healing of the ulcer, a successful course of treatment with sucralfate should not be expected to alter the post-healing frequency or severity of duodenal ulceration.

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Pregnancy: Teratogenic effects. Pregnancy Category B. Teratogenicity studies have been performed in mice, rats, and rabbits at doses up to 50 times the human dose and have revealed no evidence of harm to the fetus due to sucralfate. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

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Adverse reactions to sucralfate in clinical trials were minor and only rarely led to discontinuation of the drug. In studies involving over 2,500 patients treated with sucralfate, adverse effects were reported in 121 (4.7%).

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OVERDOSAGE
There is no experience in humans with overdosage. Acute oral toxicity studies in animals, however, using doses up to 12 gm/kg body weight, could not find a lethal dose. Risks associated with overdosage should, therefore, be minimal.

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1. Eliakim R, Ophir M, Rachmilewitz D: *J Clin Gastroenterol* 1987;9(4):395-399.

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Infection with the Human Immunodeficiency Virus (HIV) as a Risk Factor for Bacteremic Illness Due to *Streptococcus Pneumoniae*

EDWARD L. PESANTI, M.D., ROBERT W. LYONS, M.D., MICHAEL VERILLI, M.D., ROBERT LEVITZ, M.D., AND LEE BRETTMAN, M.D.

Introduction

It is widely appreciated that the human immunodeficiency virus (HIV) causes defective cell-mediated immune response.[1] However, there is also evidence that humoral immunity is impaired.[1,2] Recent observations have suggested that HIV infection may impair responsiveness to B-cell mitogens[2] and that AIDS patients are at increased risk of infections with encapsulated bacteria, particularly *Streptococcus pneumoniae*.[3-7] Although Connecticut has relatively few cases of AIDS, we suspected that the increased susceptibility to serious pneumococcal infections in HIV infection might increase the prevalence of pneumococcal illness to such an extent that it would be reflected in community-wide statistics for serious pneumococcal disease. We have therefore reviewed the records of all patients with bacteremic pneumococcal infection seen during 1986 in the community hospitals serving the Hartford area to determine age and the presence or absence of underlying diseases.

Methods

From the four participating hospitals (Newington Veterans Administration Medical Center, St. Francis Hospital, Mt. Sinai Hospital, and Hartford Hospital), the blood culture logs in the clinical microbiology laboratories were reviewed to identify positive cultures for *S. pneumoniae*. Clinical records and infection control records were then reviewed to determine: HIV antibody status and presence of AIDS or ARC (as determined by CDC criteria), site of pneumococcal infection, other complicating illnesses, age of the patient, and outcome of the pneumococcal infection. Some patients with blood-culture isolates of *S. pneumoniae* had not been admitted to the hospital. All of these patients were infants, and they are not included in our data. Data concerning AIDS morbidity were derived from the summary statistics of reported cases of AIDS provided quarterly to practicing physicians by the State of Connecticut.

Results

During 1986, 184 patients were reported to the State of Connecticut as having AIDS with 39 (21%) from Hartford County residents (unpublished data, Connecticut Department of Health Services, Surveillance report of 23 March 1987). The age distribution of AIDS patients is depicted in figure 1. In 1986, 82 episodes of bacteremic *S. pneumoniae* infection, involving 80 patients, were identified in the participating hospitals. As expected, the majority of cases occurred in the very young and the elderly (figure 1). However, as can be seen in figure 1, another peak of infections was evident in young adults. In addition to extremes of age, risk factors included: malignancy (13), chronic alcoholism (12), glucocorticoid administration (7), chronic renal and pulmonary disease (2), central nervous system disease, including head trauma with cerebrospinal fluid otorrhea (5), and congenital immunodeficiency syndromes (2).

In eight instances (in six patients) HIV infection appeared to be the only risk factor. An additional 31-year-old male was known to be an IV drug user, but had no other manifestations of immunodeficiency; no HIV antibody test was ordered and he is not considered HIV infected for this analysis. Two of the six patients with proven HIV infection, and none of the others whose records were reviewed for this study, had recurrent bouts of pneumococcal bacteremia in 1986. In one case, both episodes were caused by type 13; in the other, the first episode was due to type 4 and the second to type 17f. An additional HIV seropositive patient's records indicated

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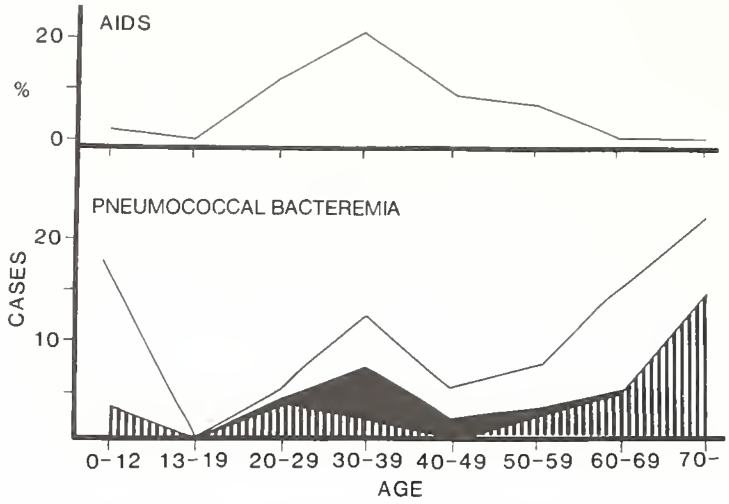

Figure 1. Age related prevalence of AIDS (top figure) in patients from Connecticut and *S. pneumoniae* bacteremia in Hartford in 1986 is illustrated. In patients with pneumococcal bacteremia (bottom figure), those with risk factors usually considered important in susceptibility to pneumococcal disease (vertical stripes) and those with underlying HIV infection (solid area) account for the majority of cases occurring after early childhood. The age distribution of patients with pneumococcal bacteremia and HIV infection parallels that of AIDS cases in the state.

that he had had a previous episode of pneumococcal bacteremia in 1985. Three of six patients considered to have been HIV infected (50%) died of pneumococcal sepsis despite appropriate antimicrobial therapy. In contrast, ten of 72 (14%) patients without HIV infection died ($p < 0.05$ by chi-square analysis). AIDS had been diagnosed prior to development of pneumococcal bacteremia in only three of the HIV infected patients. For the others, including one of those who died, the bacteremic pneumococcal infection was the first manifestation of increased susceptibility to infection.

Discussion

Although defective cellular immunity is the most evident abnormality caused by HIV, patients with HIV infection may be at increased risk of serious infection due to encapsulated bacteria, particularly *S. pneumoniae* and *Hemophilus influenzae.*[3-7] Our data suggest that HIV-related impairment in host defenses against *S. pneumoniae* can be reflected in the community-wide prevalence of bacteremic pneumococcal disease. The increase in numbers of bacteremic cases in young adults paralleled the age-related prevalence of AIDS and HIV infection.

The mechanisms whereby HIV infection predisposes to bacteremic infections due to encapsulated bacteria are unknown. Defective B-cell function may be contributory.[2] One of the cases we identified suffered recurrent infection due to the same serotype of *S. pneumoniae* and appears to have been unable to generate effective antibodies. If most HIV infected patients are unable to respond appropriately to polysaccharide antigens, vaccination would not be likely to be beneficial. Only limited, and contradictory, data are available concerning response of HIV infected patients to pneumococcal vaccine.[11,12] It is also possible that other factors, particularly splenic clearance,[8,13,14] are involved. It is possible that viral (either HIV[16] or cytomegalovirus[17] infection of splenic macrophages results in impaired function.

Whatever the mechanism, common and life-threatening infections, such as bacteremic pneumococcal pneumonia, most not be overlooked whenever patients with HIV infections present with febrile illnesses. Although it is quite possible that vaccination would be relatively ineffective,[9] consideration should be given to offering pneumococcal vaccine to HIV infected patients. Long-term prophylaxis with penicillin or ampicillin may be appropriate after a first episode of bacteremic pneumonia with either *S. pneumoniae* or *H. influenzae.*

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Physicians' Attitudes and Knowledge About the Management of Cancer-Related Pain

PETER K. SCHAUER, M.D., TAMARA L. WETTERMANN, B.S., AND ANNELIEKE R. SCHAUER, R.N.

ABSTRACT—A four-part questionnaire was administered to 44 internal medicine resident physicians to gather information about 1) background demographics, 2) physician's personal attitudes towards pain, 3) physicians' attitudes concerning the management of cancer-related pain, and 4) physician's level of factual knowledge about pain management. Sixty-four percent believed they had received inadequate preparation in pain management in medical school. Although 70% felt their current ability to manage cancer-related pain was above average, only 55% knew morphine could be given orally, and 68% underestimated the dose and duration of action of the most commonly prescribed narcotics at our hospital. The authors suggest an educational approach that may improve the management of cancer-related pain.

Introduction

Effective management of cancer-related pain is of vital concern to cancer patients and their families. In 1973 Marks and Sachar[1] reported the results of a survey done at two New York City hospitals concerning pain management. They concluded that not only did physicians prescribe inadequate doses of analgesics for patients with cancer-related pain, but that the nursing staff only gave 75-80% of the dose ordered. They pointed out that most physicians and nurses are taught to treat acute rather than chronic pain, and physicians' concerns about the adverse effects of narcotics interfered with effective pain management.

We designed this study to evaluate the current attitudes and knowledge of resident physicians at a large teaching hospital about the management of cancer-related pain We attempted to examine physicians' attitudes about pain control, factual knowledge about analgesics and chronic pain, and physicians' perception of the need for more education about cancer-pain management.

Materials and Methods

Forty-four medical interns and residents were interviewed over a two month period using a four-part questionnaire (Table 1). Each interview lasted approximately one hour, and all the interviews were conducted by the same person (T.W.). Each physician was interviewed only once. Section I of the questionnaire asked for demographic information. Section II was designed to evaluate personal attitudes towards pain. Section III dealt with physicians' attitudes toward pain control in the setting of cancer-related pain. Section IV asked for specific information to test factual knowledge related to pain management.

Results

Section I of the questionnaire surveyed the demographic information concerning the medical resident physicians interviewed. Table 2 outlines these data. All but one physician (trained in Tel Aviv) were graduates of United States medical schools. There were 35 males and nine females whose ages ranged from 24 to 36 years (median age 28). Sixteen had completed a four to eight week rotation on the medical oncology service. The 44 physicians interviewed represented 85% of all medical residents enrolled in the training program.

Table 3 summarizes the results of Sections II, III, and IV. Section II examined a physician's personal attitude toward pain. Fifty-two percent felt they had an above average pain tolerance. In comparison with their patients, 23% believed they had more tolerance to pain, 20% less tolerance, and 57% the same pain tolerance. Sixty-four percent stated that they had experienced severe pain.

Section III examined physicians' attitudes toward pain control in the setting of cancer-related pain. Sixty-four percent felt that their medical school training had poorly prepared them to manage cancer-related pain. Seventy percent felt their current ability to manage pain was above average. Twenty-five percent felt that addiction was a concern in this group of patients, and 27% would

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change therapy because of this concern. Fifty-five percent felt it was better to start with low doses of pain medications and escalate the dose to achieve pain control. Thirty-nine percent said that they regularly told their patients about the medications prescribed (name, side effects, how to take). Fifty-nine percent felt that there was a discrepancy between the dose of medication ordered and the dose that their patients actually received. Fifty-five percent had used placebos to manage pain.

Section IV tested factual knowledge concerning pain management. Fifty two percent felt the total daily dose of narcotic administered is higher if ordered on a "PRN" basis, and 14% were uncertain. Seventy-three percent believed that placebos do not work in patients with organic pain. Only 55% knew that morphine could be given orally, and 20% knew that methadone could be given by injection. When asked to convert a dose of intramuscular meperidine (Demerol) to oral methadone, 34% gave a low dosage and 30% did not know the conversion. Although not included in Table 3, when asked to give the equivalent doses of morphine, meperidine, methadone, codeine, and oxycodone and to give their durations of action, 68% underestimated the dosage and durations of action.

Table 1

PAIN MANAGEMENT QUESTIONNAIRE

Section I. Demographic Information

Age ________ Medical School attended ____________________
Sex __________ Year of Graduation ________________________
Experience on medical oncology rotation (yes/no)

Section II. Physician's Personal Attitudes Towards Pain

a. On the line provided indicate your own pain tolerance.
low tolerance ______________________________ high tolerance
b. Do you tolerate more/less/same amount of pain as your patients?
c. Have you ever experienced severe pain?

Section III. Physician's Attitudes Toward Pain Control in the Setting of Cancer Related-Pain

a. Did you feel well prepared to manage pain at the time of graduation from medical school?
b. On the line provided indicate your current ability to manage pain.
not well ____ very well
c. Is drug addiction a concern in this group of patients?
d. Would you change your treatment because of this concern?
e. Is it better to start with a low dose of pain medication and escalate or is it better to start with a higher dose initially to achieve pain control?
f. Do you tell your patients about the medications you prescribe for them (name, side effects, how to take the medication)?
g. Is there a discrepancy between the dose of medication ordered for a patient and the dose that the patient actually receives?
h. Do you use placebos for pain control?

Section IV. Factual Knowledge About Pain Management

a. Is the total daily dose of narcotic a patient usually receives higher if ordered on an "around the clock" basis or on a "PRN" basis?
b. Do placebos work in patients with "organic" pain?
c. Can morphine be given orally?
d. Can methadone be given by injection?
e. Convert a 100 mg IM dosage of meperidine (Demerol) to an oral dosage of methadone.
f. What are equivalent doses of morphine, meperidine, methadone, codeine, and oxycodone? What are their durations of action?

Table 2

RESULTS OF SECTION I. DEMOGRAPHIC DATA ON PHYSICIANS INTERVIEWED

Year of postgraduate training	*Number interviewed/ (Number of physicians in that year of the training program)*	*Male*	*Female*	*Experience on oncology service*
PGY 1	13/(17)	9	4	0
PGY 2	10/(12)	9	1	1
PGY 3	12/(14)	10	2	6
PGY 4	9/ (9)	7	2	9
Totals	44/(52)	35	9	16

Table 3

RESULTS OF SECTIONS II-IV

						Totals	
Section II. Personal Attitudes Towards Pain	PGY	1	2	3	4	#	(%)
a. Personal pain tolerance.	Below average	6	6	4	5	21	(48)
	Above average	7	4	8	4	23	(52)
b. Pain tolerance as compared to their patients.	More	3	4	2	1	10	(23)
	Less	3	2	1	3	9	(20)
	Same	7	4	9	5	25	(57)
c. Ever experienced severe pain?	Yes	10	7	8	3	28	(64)
	No	3	3	4	6	16	(36)
Section III. Physician's Attitudes Toward Pain Control in the Setting of Cancer-Related Pain	PGY	1	2	3	4	#	(%)
a. How well prepared in medical school?	Well prepared	7	3	3	3	16	(36)
	Poorly prepared	6	7	9	6	28	(64)
b. Current ability to manage pain.	Above average	7	8	9	7	31	(70)
	Below average	6	2	3	2	13	(30)
c. Is addiction a concern?	Yes	3	4	0	4	11	(25)
	No	10	6	12	5	33	(75)
d. Would you change therapy because of concern about addiction?	Yes	3	5	2	2	12	(27)
	No	10	5	10	7	32	(73)
e. Is it better to start with a higher or lower dose?	Higher	2	0	6	4	12	(27)
	Lower	9	8	4	3	24	(55)
	Depends	2	2	2	2	8	(18)
f. Do you tell your patients about the medications?	Yes	6	7	1	3	17	(39)
	No	6	3	4	2	15	(34)
	Sometimes	1	0	7	4	12	(27)
g. Is there a discrepancy between the dose of medication ordered and the dose given?	Yes	6	8	6	6	26	(59)
	No	3	1	6	3	13	(30)
	Uncertain	4	1	0	0	5	(11)
h. Do you use placebos?	Yes	4	5	9	6	24	(55)
	No	9	5	3	3	20	(45)
Section IV. Factual Knowledge About Pain Management							
a. Is the total daily dose of narcotic higher if ordered "around the clock" or "PRN"?	ATC	4	5	0	6	15	(34)
	PRN	9	2	9	3	23	(52)
	Uncertain	0	3	3	0	6	(14)
b. Do placebos work in patients with "organic pain"?	Yes	3	3	0	2	8	(18)
	No	8	7	11	6	32	(73)
	Uncertain	2	0	1	1	4	(9)
c. Can morphine be given orally?	Yes	7	5	8	4	24	(55)
	No	6	5	4	5	20	(45)
d. Can methadone be given by injection?	Yes	0	1	3	5	9	(20)
	No	13	9	9	4	35	(80)
e. Convert the IM meperidine dose to an oral methadone dosage.	Correct	2	3	7	4	16	(36)
	Low	5	3	3	4	15	(34)
	Unknown	6	4	2	1	13	(30)

Discussion

Achieving pain control is important in and of itself. In patients with cancer, however, it is vital because until the patient is comfortable, treatment planning, nutritional, and emotional issues cannot be addressed. Cleeland[2] makes several points in his discussion of the impact of pain on the patient with cancer: 1. The public thinks of severe pain as being a natural consequence of cancer. 2. This is an inevitable occurrence. 3. Because of this fear patients may postpone evaluation and therefore delay diagnosis. For those cancer patients for whom curative therapy is not possible, palliative measures assume particular importance. One way of easing the public's fear is to demonstrate a superior ability to control this pain.

Our study was designed to see how physicians at different levels of postgraduate training approach pain management. Our premise was that physicians' attitudes and knowledge are intimately related to their decision making in managing patients with cancer-related pain. Our study confirms prior studies[1,3,5] in that physicians underestimate the dose and duration of action of commonly used analgesics and are concerned about addiction. One of the most striking findings was the frequent (64%) feeling that lack of training in pain control management is perceived to be a serious problem by resident physicians. Although difficult to quantitate, one of the most encouraging aspects of this survey was the enthusiasm and willingness to cooperate shown by the physicians interviewed.

There have been several excellent reviews dealing with pain management.[6-9] There has also been a recent plethora of newly marketed oral narcotics which were unavailable five to ten years ago. The entire subject of pain management merits more emphasis both during medical school and during postgraduate residency training. We have made several changes in our approach to our residency education as a result of this survey. We now present a core curriculum, including lectures and bibliography, dealing with the basics of pain control, and review the pertinent pharmacology of the commonly used pain medications. We have developed a pain control team in conjunction with the department of pharmacy at Hartford Hospital to serve as a consulting service. We also emphasize practical experience dealing with cancer patients' pain control problems both on an inpatient and outpatient basis as part of our medical oncology rotation. Since practice patterns become engrained during a physician's training, an informed, compassionate approach to pain management taught at that time should have significant impact on future patient care.

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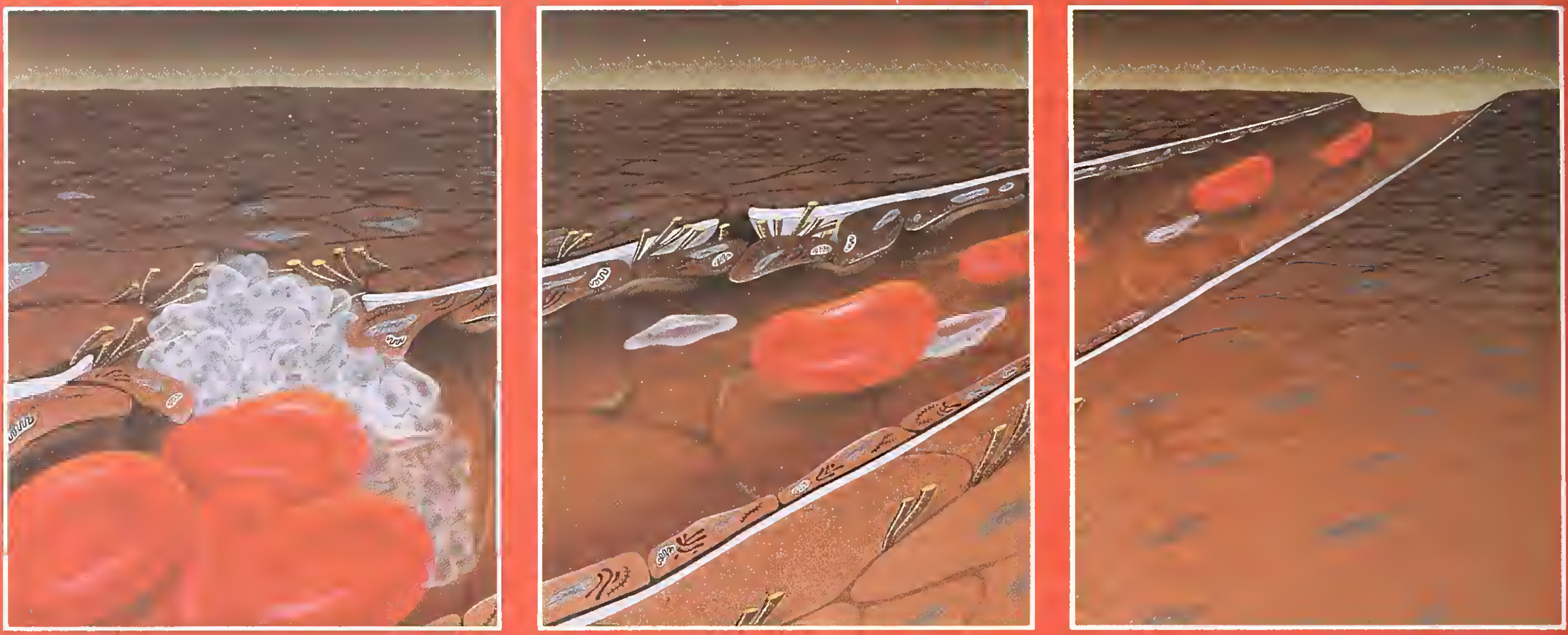

Artist's depiction of red blood cells and platelets

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Clostridium Septicum Myonecrosis in Association with Colonic Malignancy

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CHRISTOPHER M. McLAUGHLIN, M.D., THOMAS SWEENEY, M.D.,
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ABSTRACT—The association of colonic malignancy with *Clostridium septicum,* a gram-positive anaerobe, was reported nearly 20 years ago. An opportunist in compromised hosts, this organism's presumed portal of entry has been the distal ileum and cecum where significant proportions of tumors have been located. We present a case in point of a patient with *Clostridium* myonecrosis and occult colon cancer along with a review of literature. These infections carry a mortality of 50% to 100%. The only successful treatment is surgical intervention combined with intravenous antibiotics within 12 hours.

Case Report

A 48-year-old white female presented to the emergency room with fever, leg pain, and a history of diabetes; she had received an insulin injection in the left buttock the day prior to admission, and later developed left buttock pain with radiation down the left leg. This was accompanied by fever and chills; she was admitted within ten hours of onset of these symptoms.

Her temperature was 103° F, rectally. The left buttock showed a 7 × 8 cm zone of discoloration of the area of the insulin injection site which was tender. The result of the abdominal examination was normal. An x-ray film of the left hip revealed air in the soft tissues. Her hematocrit was 38.6% and her WBC was 15,700 with 60 segmented and 20 band forms. Aspirates from the site revealed gram-positive rods on Gram's stain. Blood cultures later grew *Clostridium septicum.*

She underwent a wide debridement of the region after IV penicillin was instituted. She required further debridements, and her postoperative course was complicated by a pulmonary embolus; she began to have abdominal pain and bloody diarrhea after anticoagulation therapy. Colonoscopy revealed a mass in the hepatic flexure which was biopsied and revealed adenocarcinoma. She underwent a right hemicolectomy and a ligation of the inferior vena cava. Pathologic examination revealed Duke's C adenocarcinoma. Her postoperative course was unremarkable and she was discharged.

Discussion

The association between *Clostridium septicum* and colon cancer was first reported in 1969.[1] Since then only a few reports have confirmed this correlation.[2,4,6-10] *C. septicum* is a gram-positive rod, an anaerobe motile in its early stages. Several studies have failed to demonstrate its presence in the normal gastrointestinal tract, which supports its role as an opportunistic invader in the immuno-compromised host.[2,3] Similar to other *Clostridium* species, *C. septicum* produces several toxins, alpha toxin is considered the most lethal. However, the antitoxin is not effective in myonecrosis.

With bacteremia and septicemia the portal of entry into the bloodstream is through mucosal ulcerations in the bowel, most likely secondary to tumor as in our patient. Myonecrosis then occurs in areas of relative ischemia such as in a hematoma or necrotic region. Manifestions of septicemia include fever, toxemia, and abdominal pain (64%).[4] In myonecrosis there is accompanied discoloration of the skin with edema and crepitus.[5-7] The mortality is high (50-78%).[1-7]

Diabetics are more prone to the opportunistic role of *C. septicum.* It is postulated that the microvascular changes of diabetes induce a region of tissue ischemia.[8,9]

The distribution of colonic tumors associated with *C. septicum* predominate the right side with the cecum as the most common site. In a study of Koransky et al of 59 patients with *C. septicum* bacteremia, 42 (71%) had malignancies, the most common being colonic (14%). The most frequent site of occurrence was the cecum (53%).[4] It has been postulated that the difference in pH and osmolarity of the right colon provide a more favor-

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able environment for the organism. In a total of 17 cases reported in the literature, nine lesions occurred in the right colon with six in the cecum itself.

In reviewing the literature of the past 15 years, we found that *Clostridium* myonecrosis correlated not just with colonic cancer but with other malignancies as well; however, colonic cancer remains the highest (Table 1). Mortality remains high in all cases.

Treatment of myonecrosis depends on early detection and surgery. Early surgical debridement should be as extensive as necessary and several procedures are not uncommon to remove all involved tissue. Antibiotics have been effective if started early, but are not a substitute for early surgical debridement. Alpern et al showed a 90% survival rate when antibiotics were started within 12 hours or less, but only 10% with late treatment. This was confirmed by Koransky et al, however, these studies included patients with *C. septicum* bacteremia without focal myonecrosis which may explain their high survival rate when treated with antibiotics alone.[1-4] In contrast, Katlic et al showed only a 50% survival rate with surgical intervention in the face of myonecrosis.

Table 1

SUMMARY OF REPORTED MALIGNANCIES ASSOCIATED WITH *CLOSTRIDIUM SEPTICUM*

		Malignancies							
		Total		*Colonic*		*Diabetic*		*Mortality*	
Reference	*n*	*Number*	*(%)*	*Number*	*(%)*	*Number*	*(%)*	*Number*	*(%)*
Katlic	7	7	(100)	4	(58)	2	(29)	5	(70)
Schaaf	6	6	(100)	3	(50)	3	(50)	6	(100)
Koransky	59	41	(71)	14	(67)			40	(68)
Kaiser	13	13	(100)	6	(46)			8	(60)
Alpern	27	23	(85)	6	(26)			13	(50)
Leung	1	+		+		+		died	
Collier	1	+		+		+		survived	
Kizer	1	+		+		−		died	
Total	115	93	(91)	36	(39)			74	(65)

In conclusion, we agree with the recommendations made by Katlic et al in that a patient with documented *C. septicum* bacteremia or septicemia should undergo investigation for an occult malignancy. The opposite is true in that immunocompromised patients are susceptible to *Clostridium septicum* bacteremia.[8] Colonic cancer correlates highly with *C. septicum* and the lesions predominate the right colon. The mainstay of treatment is aggressive surgical therapy.

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Life After....

PAULETTE R. KENDRICK

EDITOR'S NOTE: The next two articles deal with mastectomy and breast reconstruction. The first by Paulette R. Kendrick is, in her words "an effort to open communication between the medical profession and patient, between patient and future patients, and to stress the value of psychotherapy with mastectomy ...."

The second, by Stephan Ariyan, M.D., is "a comment about the impact of breast reconstruction which might be beneficial to the readers." Although written after he had read Ms. Kendrick's manuscript, he emphasizes that, "This is not a 'response' to her letter, because I do not have enough details ... to offer some insight or suggestions." Both contributions conclude with the same observation: we learn our most important lessons by listening closely to our patients.

I am a 41-year-old woman trapped in a body that I struggle with daily. At age 38 I had an active career, was married to a man who loved me, and had a son in high school. We were about to fulfill a 20-year dream—building a house. Slowly our dreams began to shatter when I noticed bleeding from my right breast.

Doctors first suggested antibiotics, then antiinflammatory drugs, then a quadrantectomy. The bleeding persisted, and I subsequently had bilateral mastectomies with immediate reconstruction. Over the next two years I had three more operations because of complications from the reconstructive surgery.

I am now divorced and living alone. I am left with feelings of anger and confusion. Anger because it had happened to me and not to someone else. Anger because I was so very naive throughout my contact with the medical profession and followed a life-long pattern of being a good girl who did as she was told, without asking many questions, yet being confused about the paths I should take that would affect the rest of my life; confused about dating and establishing new relationships. I know our marriage failed partially because of the repeated trauma of the operations and lack of communication between my husband and me.

I have heartfelt empathy for all the women who will go through this surgery, for their anger, confusion, fears, and expectations.

Bleeding was the way my body had warned me that something was wrong. I was aware that I had fibrocystic disease, which in itself is not serious. The bleeding was an indication that something else was happening to the breast tissue. From mild spotting, the bleeding escalated to the point where it was necessary for me to wear nursing pads. I began to panic and my performance in work began to be affected. One facet of my job was to give presentations to large groups of people. The fear was always there that I would bleed through my clothes and someone would see.

For my husband and me our sex life was becoming strained. I did not want him to be making love to me and have my breast start to bleed; I was having misplaced feelings of shame. My husband was going through his own complicated set of feelings that made him also pull back from love making. To make matters worse, we were unable to talk about any of it.

The doctor felt the source of bleeding was from chronic inflammation of the milk ducts or a benign tumor. In April 1985 I had a quadrantectomy. My pathology report showed no cancer. After the surgery, when the bleeding didn't diminish in volume or frequency, it was evident that the operation had failed. I was both angry and distraught that I had lost part of my right breast to no avail.

Three weeks later my left breast started to become symptomatic. The doctor explained that it was not uncommon for one breast to mirror the other. At this point I was referred to a plastic surgeon; he explained to me that probably the only way he could assure me that I would not have any more bleeding in the right breast would be to do a subcutaneous mastectomy. With the other breast symptomatic the probability of needing the same type of surgery for the left breast was great. In an effort to avoid a second operation, and at the same time have both breasts symmetrical, it was decided that bilat-

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eral subcutaneous mastectomies with immediate reconstruction should be done.

Since this was one of the most crucial decisions I would make in my life, I had consultations with three plastic surgeons. All were in agreement about the diagnosis and procedure to be done. Deep inside me I had hoped that one of them would not agree. I wanted to be told that the bleeding could be stopped without surgery.

It was very foolish of me not to have someone accompany me to any of these preoperative visits. It might have occurred to them to ask questions that I did not, and I could have used the support and comfort.

I was completely overwrought, yet my family and friends seemed calm. They spoke about the surgery in a detached way. I thought that I must be overreacting to the situation when, in fact, I wasn't. Those around me were not showing their emotions because they did not want to upset me more than I already was. A little better communication would have done wonders for all of us.

All the surgeons spoke about immediate reconstruction. Their logic was that it would save me an additional trip to the operating room and a second hospital stay.

Implants were the only options discussed for reconstruction. When the procedure was explained to me, I never got the feeling that it was either very involved or held a lot of risks. Consequently, in the latter part of June 1985, I had bilateral mastectomies with immediate reconstruction, using silicone implants. The surgeon sculptured beautiful-looking breasts. I had difficulty touching and looking at them because they were not my breasts, but I would learn to live with them.

In September 1985, while showering, I noticed what felt like small pebbles under the areola. When I went back to the surgeon he told me that some of the tissue under the areola had died and I would need another operation. Rage engulfed me—I had done everything he had told me to do: breast massage twice a day to keep the implants soft, exercises to increase my range of motion, and six weeks of ace wrap to keep the implants in place.

In October 1985 the surgeon excised the nodules under both nipples. Previous to this surgery I had never given any thought one way or the other about any tissue being left under the areola after the mastectomies. It is important to know if there has been any tissue left, because that tissue is at risk for more problems. In my case, that problem was continued bleeding.

The third operation was over and I could now get on with my life, or so I thought. Then I realized the usual postoperative pain was not subsiding. The right breast had a more intense pain than the left side. At the beginning of November 1985 I again went to see the surgeon. He told me, upon examination, that the implant on the right side had encapsulated. Encapsulation happens when scar tissue forms around the implant, creating a strangulation effect. To me, encapsulation explained why the pain had not subsided. In my mind the fourth operation would both take care of the encapsulation and pain.

I was angry, upset, and confused, and thought: "Four times! Why me?" I had difficulty dealing with this one. As a matter of fact, I didn't deal with it at all. I postponed the surgery for as long as I could. I wanted to be well for the holidays.

In January 1986 the fourth operation was done. Again the usual postoperative pain did *not* subside. My right breast would very often go into spasm, which would last for a considerable amount of time. Coping with pain became a way of life for me, creating limitations, frustration, and despair.

In August 1986 I went to a neurologist to see if there was any neurological basis for my pain. My diagnosis was nerve damage with intractable pain, postmastectomies. The doctor referred me to a physical therapist. I was able to regain some range of motion and lessen the pain slightly.

In November 1986, also upon the neurologist's recommendation, I went into intense psychotherapy. By this time my self-esteem was nonexistent, my dignity very bruised, and I was a distraught person. I needed someone who could help me understand what was happening to me both physically and emotionally; someone to help me understand why I was having difficulty adjusting to having mastectomies. I began to realize that many women go through the same turmoil and frustration that I was going through. My husband chose not to get into psychotherapy with me; our son was away at school and never had a choice. The emotional strain of going to therapy alone slowed my progress, yet therapy was a positive and helpful step for me. I learned several techniques to help me cope with the pain, but my quality of life was only barely acceptable. The spasms became more intense, lasted longer, and were more frequent.

As all of this was going on, I again started to bleed from the right nipple. When the bleeding first started, I was secretive about it. I wanted no one to know; my fear was more surgery! I didn't want anyone to pressure me to go back to the surgeon. It got to the point where I could neither hide the pain nor the bleeding. I was also aware that my implants had migrated. I returned to the surgeon and he substantiated my fear—another operation would be necessary. The procedure would remove all tissue left under the areola and remove the nipples, as they would be unable to survive without any tissue to provide a blood supply to them. At the same time smaller implants would be put in and excess skin removed. I felt that I had no control of my body or my life.

I did not undergo surgery until October 1987. There were things happening that summer. I wanted to enjoy my son's graduation; my sister and her husband were coming up from the South; I wanted to enjoy the new house we had built, and spend warm sunny days picnicking or going to the beach. My motives were not only selfish; I knew I was not in any psychological condition to go back to the operating room at that time.

To help ready myself, I was in both private therapy and group therapy. My husband and I became estranged. He started to talk about divorce.

I spent a great deal of time with close friends who helped me cope with the bleeding, chronic pain, and depression. During this time I learned the true meaning of love and support. Love to me was someone holding me while my breast was in spasm and bleeding, telling me that no matter how things turned out, the love would still be there. Support was not giving up on me, even when I was pushing away.

When October came, I was scared and angry, but well prepared psychologically for the surgery. I filed for divorce two weeks before I went in.

The fifth operation was in October 1987. It eliminated the bleeding, but I am still in chronic pain. This pain I know will last the rest of my life.

In my case, every procedure was both involved and high risk. In all but the last operation, I had postsurgical complications of infection and respiratory difficulties, as well as chronic pain from the third operation on. I discovered, after the last procedure, that there is an alternative for reconstruction, using abdominal tissue in place of silicone implants. This is a complicated procedure, but one that has little or no rejection factor.

The medical experts and the patients can and do perceive the same situation differently. What I considered a *failure,* the doctor considered a complication. I still wonder if some of this could have been avoided if the alternative of abdominal tissue transfer had been considered.

Three years later, after more than 15 total hours under anesthesia, after five very emotionally and physically painful operations, I have breasts with no sensitivity to touch, a 12-inch band across my chest with no sensation, and breasts with no nipples. There is little or no chance that nipple reconstruction would be successful. I have limited range of motion and am in chronic pain.

For the doctors it was five operations; for me it was breast removal, reconstruction, loss of feminity, dignity, and self-esteem.

Do not misunderstand me. I don't feel as if I were surgically abused at all; I am the exception rather than the rule. I suffered many of the things that can go wrong with reconstruction. For me there is one plus—I am able to have breasts as opposed to wearing prosthetics. I will always wonder whether it was worth it for me; for some women it may be worth any amount of physical and emotional pain.

Pre- and postoperative counseling could help, and yet it is an issue that doctors too often dismiss or seldom address. The effects, both positive and negative, are not only felt by the patient but also filter down through her family and friends. For many women mastectomies are a very traumatic experience in their lives. Unconditional love, understanding, and support are needed during this time. How can a family be expected to give support and understanding and accept the situation when they don't fully understand the issues? It is difficult to love someone and not be able to help.

I am outraged that I have had five operations and am left with no nipples or feeling, with the exception of chronic nerve pain. I am very frustrated that I have explored many avenues trying to alleviate the pain, all without much success. If I were not in psychotherapy, I would not be able to deal with these issues. Even with therapy there are no quick and easy answers.

I recommend that the medical community gather information from the women who have gone through these procedures. Communication needs to improve between patient and doctor. As part of the communication all options available, as well as risks, failures, and complications, should be spelled out. Doctors must understand that this is not intended as an invasion into their territory or an attempt to discourage women from having reconstructive surgery. Women need to be better informed, giving them a clearer picture, a broader basis on which to make their decisions. Talk to women who have had these operations. They can help you. Life experience speaks clearly, it is our greatest teacher.

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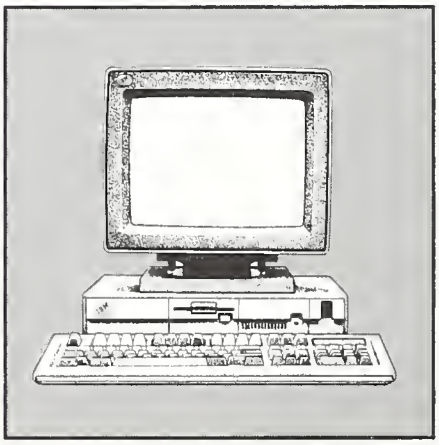

Listen...and You Shall Hear!

STEPHAN ARIYAN, M.D.

VERY early in our training as physicians, we were all taught in medical school that a careful history was a very important part of the information that we must accumulate and assimilate, together with the findings on physical examination, in order to determine a diagnosis. It has often been said that by the end of the history and physical, the diagnosis should have been made by the physician in approximately 90% of the cases, and that all the remaining diagnostic tests are only to confirm this clinical impression. Furthermore, the diagnosis is most frequently apparent at the completion of the history and before the physical examination begins. It is, therefore, essential for us to be able to ask the right questions of the patient in order to get this information, and to know how to proceed to the next question as we go down the decision tree towards the eventual diagnosis. Often, the patient has been feeling a number of symptoms but does not know how to express them or explain them to us, and we must guide her through this process.

While this is true of many of the circumstances in medicine, it is especially true in more sensitive areas. It is not uncommon for a patient to walk into a physician's office and "present" his or her hand to the physician and merely state that "it hurts." If there is a laceration and we elicit from the patient that the window broke when he slammed the door shut and this caused the laceration, and examination reveals no evidence of tendon, nerve, or skeletal injury, the diagnosis of a simple laceration is easily made and easily treated. However, when the hand is swollen without any history of injury, the diagnosis now becomes more difficult. It is important to look beyond the hand to see the whole patient to determine what information we can gather to make the diagnosis to help the patient. Was there any previous episode of swelling? Was there any contact with a chemical agent or with plants that would lead to an allergic reaction? Was there a previous history of surgery in the axillary region that would lead to lymphedema? Was there a history of drug abuse? Was there a history of joint swelling or fever?

It is also important to get to know the patient, something that is difficult to do on a first visit and in a short period of time. We learn as physicians to be observant of what we see and hear and feel, and to gather information from all our senses. A patient who seems to be angry when responding to a simple question, or to experience more pain than one would expect with a simple touch of the hand, would tell us that there is more to the situation than we can readily see. On the other hand, the patient may demonstrate that there is no range of motion of the fingers and may pull his hand away because of sensitivity when the hand is touched on examination, but not show much expression of discomfort, distress, or concern; this patient is showing us that there is something beyond what we can see. While there are varying degrees of pain and suffering, anguish, and despair, all patients do not express this in the same way or to the same degree.

This is also true of the patient with a disorder of the breasts. The breast is an important part of the body image to the patient. This has become much more apparent to surgeons over the last decade. There are a number of books published by patients, articles that are written for lay journals by these patients, and letters to editors of medical journals in which they are trying to help to increase the understanding between patients and physicians of the impact of surgery on the breast. There are studies looking at the motivation of patients who undergo breast reconstruction in contrast to those who choose not to have the reconstruction; those who choose immediate reconstructions as opposed to delayed reconstructions; and studies that have evaluated the patients who have chosen from the various techniques of reconstruction that are available. There are patients who have described ambivalent feelings of love and hate towards their surgeons, who had performed the mastectomy—love for having cured them of their cancer, and hate for having left them "mutilated." These conflicting feelings, while on the surface, may appear to be confusing, but when looked into may explain some of the other symptoms that the patients are feeling that may not be readily explained by anatomy or physiology. There are the patients who have had loving relationships with very supportive husbands throughout their experience of undergoing mastectomy for cancer, but who have not allowed

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STEPHAN ARIYAN, M.D., Professor of Surgery; Chief, Plastic and Reconstructive Surgery, Yale University School of Medicine.

their husbands to see them undressed, yet, after undergoing reconstruction a few years later, they were able to undress without inhibition in front of their spouses. There are still other patients who have had difficulty even looking at themselves in the mirror until after they have had reconstruction for similar reasons. For some the reconstruction may not bring immediate return to "normalcy," while there are others who have felt, within one or two days after breast reconstruction, that this reconstructed breast is their "own," rather than "a foreign part," a breast mound that they could not assimilate into their own body image for several months.

It is important for us as surgeons to remember that the patient who is faced with the idea of undergoing surgery is under stress, and may or may not be able to understand everything that is explained to her. I believe that there is no such thing as "minor surgery" but rather that all surgery is "major surgery," each to a varying degree. It is not unusual for a patient who is given information on the extent of surgery that is required, the options that are available for the repair, and the complications that may occur, to feel that she has understood all this while in the office, only to forget everything once she has reached her home. Indeed, there are studies that have demonstrated that it is very difficult to get true informed consent by the patient who is facing the prospects of an operation. For this reason, many patients wish to have a spouse along during the office visit, or a member of the family, or a close friend. Even so, it is not unusual for both these individuals to hear the same surgeon give the same information, and subsequently to discuss it all with totally different perspectives.

Therefore, physicians have learned not only to give information, but to listen to their patients. Sometimes, even the physicians do not necessarily hear what the patient is telling them. Occasionally, patients are trying to tell us that they feel pain, or they are confused, or they feel uncertain, but we may fail to perceive this.

When it comes to the patient who is seeking breast reconstruction, whether for a radical mastectomy for cancer, a simple mastectomy for benign disease, or surgery to correct a congenital deformity, the experience of other patients has been helpful. Most surgeons have learned from their previous patients how to detect some of these uncertainties and to bring them to the surface and to describe or discuss them with their patients in order to alleviate anxiety. In addition, patients have brought to our attention some experience that they have gained from the operation and reconstruction, and that they feel they can help other patients with this experience. In many areas patients have formed patient information sources and have made themselves available to talk to others who are facing these surgical procedures, and to assist with certain of the decisions that they need to make. There is no question that a patient who is to undergo such an operation can gain much from discussion with former patients because they can describe experiences and feelings about themselves, their spouses, and their families that can only be understood by another patient. This, I believe, has been one of the most important sources for support for the breast reconstruction patient.

We have learned much over the last few decades. We are still learning from our patients as we are treating them. And as we continue to listen…we will learn even more.

Women in Medicine and the Medical Sciences: Problems, Progress, and Prospects

MERLE WAXMAN

The past decade has seen a number of striking advances with respect to women in medicine and the medical sciences. Enrollment of women in medical schools has increased steadily from approximately 6% in 1960 to 34% in 1987.[1] Notably, as measured by most academic yardsticks, graduate-level women students in medicine, science, and engineering perform as well as students as do their male counterparts in graduate school.[2] The number and percentage of women in residency programs have also risen steadily; from 19% in 1978 to 28% in 1987. In some specialties, eg, pediatrics, women fill one half of the housestaff positions. Thus, the past several decades have witnessed an increasingly significant representation of women within medicine and the medical sciences.

Despite this, some significant problems remain. In this article I will briefly discuss some of the issues that face women in academic medicine as we approach the 1990s. I will also discuss some of the progress made with respect to women in medicine, and the prospects for future progress. Given the changing climate of medicine and the need to maintain within the medical profession a milieu in which each physician can perform at his or her highest level, these issues have implications not only for women but also for the medical profession at large.

A number of recent consensus reports characterize the academic medical environment as a "chilly" one for women. One report, "The Campus Climate Revisited: Chilly for Women Faculty, Administrators, and Graduate Students,"[3] focuses on the subtle ways in which women are treated differently from their male counterparts. These behaviors create an academic milieu that communicates to women that they are not quite "first-class" citizens in the academic community.

While there appear to be multiple causal factors at work in this situation, a number of issues (some of which appear to be remediable) emerge as especially important.

Role Model and Mentoring

> "I had a male advisor. There was only one woman in the department and she did not have tenure ... and I worried about fitting into a field with no, or few women in it."
>
> — Female medical student - fourth year

From my vantage point as Director of the Office for Women in Medicine at Yale, it appears very clear that role modeling and mentoring are very important ingredients in the medical training process, and that these aspects of medical training are less accessible to women than to men. Thus, women medical students have commented, "There is no senior woman faculty member I can talk to about my plans and aspirations"; "It seems to me that it's unlikely that I can succeed in academic medicine—there is no one like me who has really made it on the faculty"; or "I don't think I gained as much from my rotation as my male partner. The attending always spoke to him as if I wasn't there."

While 34.3% of the entering students in U.S. medical schools are women, less than 19% of the full-time faculty currently are women, and only 9.4% of the women have attained the rank of full professor, whereas 31.5% of men have attained the rank of full professor.[4] The number of women in senior administrative positions is even smaller. The paucity of women in senior positions has an important secondary effect on more junior women, ie, students and junior faculty.

It is well known that mentoring and role modeling are important prerequisites for success in academia.[5] The need for effective mentoring does not end after undergraduate education. The absence of women in visible positions means that these important role models do not exist, or are rare for women at academic medical centers. While in many cases, male faculty make great efforts to attempt to assume the function of role models, sociological studies demonstrate that members of a minority (such as women) learn best from role models and mentors representing that minority.[6] It is likely that the pau-

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city of female mentors and role models has historically had an important negative effect in making it difficult for junior women to achieve their full potential. In addition, many women medical students, graduate students, housestaff, postdoctoral fellows, and junior faculty feel isolated from the networking and collegiality that goes on (and that may be essential for success) in their departments.

An important result is that women are, in part, excluded from the "professional socialization process."[7,8] This distancing contributes to a slowing of progress in academics, which is manifest for some women at the early end of the pipeline. Progress along the academic ladder appears to depend, in part, upon positive feedback (ie, reward with more powerful and prestigious positions are often more readily available for those who have previously been promoted.)[9] For the individual whose career is not yet launched, and for whom there is no role model, mentor, or advocate, the first step can seem impenetrable. Thus, the situation can be a self-reinforcing one. Looked at in a more positive way, even a relatively brief exposure to an *appropriate* role model can have a very significant effect on an individual at the beginning of a career in medicine.

Critical Mass

> "Everyone in the laboratory tried to be very nice to me, but I was the only woman. The other students spent early evenings on the squash courts. They took their books and I'm glad that they shared their ideas, but I wasn't part of the group."
>
> — Female MD-PhD student

A second factor, which plays a strong role in helping to define the atmosphere for women in medicine, arises from the absence of a "critical mass." An important factor in the education, recruitment, and retention of any constituency is being part of a reasonably sized peer group. People are generally more comfortable in situations in which they are not the only one of a kind or one of a few.[10]

This issue has become, for female students, a less pressing one since about one third of each entering medical school class is made up of women. Yet, on the wards, it often remains a man's world. In some cases male physicians have use of a physician's locker room while female physicians must share a locker with nursing staff. In other cases, a woman medical student, in the context of a ward team otherwise composed of men, may find herself being treated differently by the attending, who may ask her different types of questions from those asked of her male counterparts (or may not take her seriously and thus ask her no questions) on rounds. Sociological studies demonstrate that these forms of prejudice occur even in individuals who do not consciously harbor "bias" toward members of a minority, and are observed repeatedly in studies of classroom teaching.[11] Kanter[12] has demonstrated that minority members in a group are more likely to be excluded from informal interaction, not by deliberate choice, but from unconscious processes. Undoubtedly, these biases in teaching style take a significant toll. Interestingly, it appears that many of these biases can be corrected when pointed out to teachers. This emphasizes the significance of educating faculty members about perception bias, stereotyping, and the importance of critical mass.

The "critical mass effect" is especially pronounced, in terms of its gender-related manifestations, at the faculty level, where women are in a distinct minority. In this regard, a woman faculty member may find herself to be the only women on a committee, research team, or clinical unit, and may be subject (or feel that she is subject) to more pressures and a different type of scrutiny from those that are levied on her male counterparts.

The issue of critical mass will be an area of concern to women in medicine until female students, residents, and faculty begin to see more women in the positions that count in academic medicine. The solutions here center on the development of adequate numbers of women in medicine and its various specialties, and on education of all concerned, especially teachers, so that they can try to counteract the subtle but far-reaching effects of the "critical mass" issue.

Flexibility

> "When I told my chairman I was pregnant he suggested that I switch to a nontenure track job. He never thought that I might want to combine a tenure track career with childrearing."
>
> — Junior faculty member

A significant set of concerns center on flexibility vis-a-vis academic progress. Female scholars do not want standards lowered to allow them to progress up the academic ladder. However, granting that rigorous standards *will* be maintained, it is nevertheless true that women encounter significant difficulties when they try to merge the demands of academia with the demands of family and parenting. Despite trends toward equal sharing of parental responsibilities in our society, parenting is still likely to remain predominantly an activity of women.

Conflicting needs of family and profession may make it difficult for some women to attain the rigorous standards that we want to protect, unless a more appropriate time-scale is used in evaluating their progress. *Temporal flexibility* in the time-line of the academic ladder must be introduced, since women and some men (even well-trained and highly motivated ones) cannot always progress along the academic time-line without interruption. In attempting to correct this situation, it is important to differentiate inappropriately slow progress from satisfactory progress that has been interrupted by responsibilities to society or family. A gap in the activity of an individual who is raising a family should not be confused with a lack of ability, interest, or ambition. The point here is not to lower standards of excellence, but rather to introduce a time-line in which each player has a reasonable chance of displaying his or her best work, so that it can be fairly judged. In some cases, it may be appropriate for judgments to be made on the basis of *quality* as well as quantity of work. For individuals with active family responsibilities, it seems reasonable to suggest that academic progress (ie, research output) should be judged by high standards, but within a more appropriate time frame.[13] This may require "stopping the academic tenure clock" during periods of child-rearing. Flexible schedules (which build upon strengths rather than weaknesses) and effective maternity and child-rearing leave policies should be developed, as well as part-time positions which will capitalize on the potential contributions of women to the academic community.

Perception Bias

> "When I needed to limit my on-call hours during the last month of my pregnancy, I was told I wasn't fulfilling my obligations. However when John hurt his knee skiing and needed time off for physical therapy, it was treated as perfectly acceptable."
>
> — Second-year house officer

During the past 20 years, women have made progress in entering and pursuing academic careers; however, perceptual sex bias, which is often unconscious and unintentional, continues to disadvantage women in the academic advancement process.

There is considerable evidence that women are perceived as less effective than men when performing at comparable levels in the academic arena. There is a stereotypical view of men as authority figures; this perception often translates into higher status, salary, and prestige. Stereotypes of women in some cases reflect feelings of subordinate position and deference to authority figures. This perception bias can have pervasive effects on academic advancement evaluation. Research has demonstrated:

- that men are promoted and tenured more often and more quickly than women with comparable credentials;[14]
- that in a review of articles identical except for the name of the writer, those with male authorship are rated as being better and more significant than those with female authorship;[15]
- that requests for promotion and support to attend professional development conferences are granted more often to men than to women presenting identical credentials and justification;[16]
- that competent men are consistently viewed as more competent than competent women;[17] and
- that chairs of academic departments evaluating CVs of PhDs suggested an average rank of "assistant professor" for women while identical records merited "associate professor" status for men.[18]

It will become increasingly important, over the coming years, to educate administrators, as well as those serving on appointment and promotion committees, with respect to such issues as perception bias and gender-related discrimination. Training of this type can undoubtedly lead to more accurate assessment of performance. Especially as the number of applicants to medical school drops,[19] it will become increasingly important for medical institutions to learn to select the most highly qualified individuals.

Support Systems

> "I always wanted to be a surgeon and I know I could have been a good clinician. I wanted to practice in a rural community. But I couldn't find child care. It wouldn't have been realistic to continue surgery."
>
> —Third-year surgical resident

We recently carried out a survey in order to gather data as to why female housestaff chose particular career paths. Surprisingly, gender-related prejudice and discrimination, family expectations, and pressures from spouse, played less of a role in discouraging women from entering demanding specialties than the absence of palpable support systems. In particular, women expressed a need for support systems such as adequate child care. There is good news here. This issue does not revolve around philosophical arguments but, on the contrary, is an operational one. The primary issue in solving this problem is the economic cost, which can be large. However, other industrial countries have solved this problem, and established child care centers on a widely accessible basis.

In practical terms, it is essential to turn attention to the interface with the family, and to develop mechanisms which facilitate comfortable and productive movement between home environment and academic workplace. This is being done to an increasingly large degree in the industrial sector, and we should urge the health care industry to keep pace.

Prospects and Suggestions

Some specific ways in which progress in medicine for women can be attained are as follows:

- Child care centers can be established in a number of forms, and have been shown to be a cost-effective way to maximize input of women in a professional workplace. It may be necessary to examine and possibly to restructure the present system in order to develop mechanisms that facilitate comfortable and productive movement between home environment and academic workplace. It will be important to develop programs that make it possible for women to remain active participants in their departments during the early childbearing years. In addition, it is important to recognize the fact that work can occasionally be done at home; sometimes productivity at home can exceed that at the laboratory.
- The tenure clock should be set for any given individual so as to take into account special personal, gender-related, and societal needs. This may mean delaying a decision on tenure or "stopping the clock" when appro-

priate. It should again be emphasized that this does not imply a lowering of the criteria for tenure. Several universities have introduced "stop-the-clock" programs which enable women who are raising children to have tenure decisions postponed.[20] Changing the tenure clock does not imply a wavering of standards, but it does provide a mechanism so that each individual can perform to full potential prior to being judged.

- "Parenting leave" policies should be explored. Given the changing nature of family life in our time, this pertains equally to men (paternity leave) and to women (maternity leave).

Until academic medical centers appoint more women, departments seeking to retain women faculty members must help them combat their professional and social isolation. This commitment must be visible and real.

Chairpersons must signal, in very explicit terms, the commitment of the departments to men and women irrespective of gender. Educational seminars and candid discussion of gender-related issues at department meetings should be encouraged. Administrators, as well as faculty, should be trained so that they can recognize and attempt to deal with perception biases.

Another significant way in which an institution can provide a more supportive working environment for women is by establishing, at a very visible level, a locus where issues of women in medicine can be addressed. The importance of doing this at an institutional level cannot be over-emphasized. The Office for Women in Medicine at Yale, in this regard, serves an important function by its mere presence—it represents, in very visible terms, a clear "statement" emphasizing the institutional commitment to women.[21,22]

By establishing an Office for Women in Medicine, the administration can play a critical role by providing leadership, legitimizing women's issues and concerns, and setting the tone for others to follow. Some specific ways in which an Office for Women in Medicine can contribute are as follows:

- By providing women students and faculty access to advisors and mentors, as well as faculty and other students.
- By developing mechanisms to bring leading women in the medical field to the medical center as speakers and to present their research.
- By allowing students and other trainees to have access to professional women in an informal setting. Students will be interested in learning how successful women in medicine balance family and careers, and how they deal with other issues.
- By sponsoring regular workshops and seminars to discuss career opportunities and issues of concern to women in medicine.
- By inviting successful alumnae to interact and be role models for students and younger faculty.

Despite significant advances, a number of major problems continue to face women in medicine. Those problems constitute an especially difficult hurdle for women in training in medicine, and this problem has the potential to grow as the number of women in medical training expands. At the same time, these problems should not be viewed as insoluble. As outlined above, there are a number of very effective mechanisms available for bridging the gender gap. Over the next few years, medical institutions will, we hope, begin to implement these mechanisms on a more widespread basis. This undoubtedly will be reflected by increasing opportunities for women to grow and contribute to our medical care system.

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Geographic Variation in Medicare Prevailing Charges for Physician Services

ELLEN K. CROMLEY, PH.D. AND GARY W. SHANNON, PH.D.

ABSTRACT—This paper analyzes geographic variations in Medicare prevailing charges for four kinds of physician service. Fee screens of the Medicare charge districts are projected onto their constituent counties. Variations in median charges between regions of the country and across metropolitan, urban, and rural counties within regions are examined. Within every region, metropolitan and urban counties show higher charges. Also, the West and South exhibit considerably higher charges than other regions. The value of uniform state, regional, and national fee schedules given the distribution of the elderly population is examined. Each alternative schedule yields a lower value than the current one. The regional fee schedule yields the lowest value for three of the four services considered. This suggests that preserving some geographic variation in fees would be desirable.

An expert advisory panel created by Congress, the Physician Payment Review Commission, recommended in their first annual report a standardized national fee schedule for physicians treating Medicare beneficiaries.[1] The fee schedule envisioned by the Commission, as reported, would allow for some regional variation but much less than the geographic variation under the current system. Reimbursement of physicians' services accounts for about 20% of all Medicare expenditures.[2] Though this is smaller than the share claimed by hospitals, policies affecting physician reimbursement are arguably of greater significance because physicians are the gatekeepers of the medical care system. Ninety-five percent of persons with reimbursable services under Medicare used physicians' services in 1982.[3] Given the importance of physician services, it is worthwhile to examine, at a time of proposed major changes in the existing payment system, current patterns of geographic variation in charges and the implications of alternative regionalized payment schemes.

This paper analyzes geographic variations in Medicare prevailing charges for several kinds of service. Included in the study are charges for initial limited office visits to general practitioners; brief follow-up visits by general practitioners to elderly in their homes and in nursing homes; and initial intermediate visits by internists to elderly in hospital. In the first part of the study, the existing geographic structure of the separate charge districts (localities) that insurance carriers use in reimbursing claims is reviewed.

In the second part of the study, the fee screens of the various localities are projected to constituent counties. Using the county as the unit of analysis, comparison of Medicare prevailing charges for the four types of services are made across all counties of the United States. Variations in median charges between regions of the country and across, metropolitan, urban, and rural counties within regions are examined. Because total program expenditure is a product of charges, population, and utilization, particular emphasis is given to the locations and elderly populations of counties whose reimbursement rates fall into the highest and lowest deciles of the range of observed charges.

In the third and final section of the analysis, three hypothetical alternatives to the present structure of fees are presented to ascertain the value of fee equalization given the distribution of the elderly population. A measure of weighted charges under four fee schedules (the current one and the three alternatives aimed at equalizing charges across geographical areas) is estimated by calculating the product of charge and elderly population in each county and summing over all counties. Although each alternative yields a lower product than the existing fee structure, lower prevailing charges in the Northeast and North Central regions for office, nursing home, and hospital visits coupled with the regions' high elderly populations would make it desirable to maintain some regional variation in charges for expenditure containment purposes.

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Background

Under the Medicare payment system, physicians have been reimbursed on the basis of a local customary, prevailing, and reasonable (CPR) charge method. Under the law, the allowed amount for a given service shown on a medical insurance claim has been the lowest of 1) the actual charge made by the physician for the service; 2) the customary charge generally made for that service; 3) the prevailing charge which is the charge most physicians would find acceptable for that service in a particular locality; or 4) the charge that would be recognized by the carrier for its own (non-Medicare) subscribers. This payment method was designed to gain program acceptance and mirrored the private market.

The present study is based on an analysis of prevailing charges that are generally the highest dollar amounts that Medicare can use in determining the medical insurance benefits in a locality.[4] Further, more than half of all services billed an all allowed amounts were paid under the prevailing charge fee screen in 1984.[5] The charge data used in the analysis were published in 1984 and reflect the pattern of charges at the time the government enacted a freeze on physician charges.[4]

Since shortly after its inception, Medicare's major problem has been rapidly rising expenditures that increased eleven-fold from 1967 to 1982.[3] Certainly a portion of the increased costs may be attributed to the relatively rapid growth in the elderly population and the increase in the proportion of eligibles receiving reimbursed services since 1967.[3] Other factors supposed to be associated with the increased costs have been the rapid rise and the geographic variability in CPR charges. The CPR system has been faulted because it provides little control over payment rates or the volume of service provided.[5]

One line of support for a uniform fee policy is that equalization is desirable on grounds of equity or at least rationalization of the medical care system. Increasingly, private and public payors are not willing to pay widely varying amounts for the "same" service. Although place variations in the availability of medical resources have been noted for years,[6,7] small area variations in utilization and cost of medical services have been especially highlighted in the recent literature.[8,9] Setting aside the considerable methodological issues attendant in such studies, that variations of the observed scope and magnitude exist should not be at all surprising in a nation as large and diverse as the U.S. where medical care has until very recently been organized as a local system.

Because costs of providing care do vary from place to place, federal policymakers have been instructed to develop a geographic index for measuring the cost of providing physicians' services.[5] This, together with a relative value scale to weight services relative to each other would provide the basis for a national fee schedule to replace the current system. One of the key tasks to be completed before a national fee schedule can be implemented is the identification of geographic areas for rate differentials.

Research to date has primarily examined the effects of some possible fee schedules on physician receipts by practice, and suggests that payments will shift away from specialists in urban areas toward generalists and less urban areas.[5,10] An alternative and complementary approach to assessing the impact of a revised fee schedule begins to explore the impact that fee equalization might have on expenditure containment by creating the opportunity for reducing charges in areas where medical prices are high. Because expenditure is not solely a function of charge but also depends on utilization and population, it is important to evaluate under what circumstances charge equalization results in expenditure reduction. The present analysis examines how the environment in which a uniform fee policy is implemented might constrain and condition its impact.

Medicare Localities

At the time the Medicare program came into being, separate charge districts were established in each state by carriers reimbursing claims under the Medicare program. Excluding Puerto Rico, there are 239 prevailing charge localities covering the 50 states and the District of Columbia.[4] Seventeen states (including Alaska and Hawaii and the District of Columbia with adjacent counties in Maryland and Virginia) have single Medicare localities covering the entire state. The largest concentration of these states is in the relatively sparsely settled Northern Plains and Mountain regions (North and South Dakota, Montana, Wyoming, Utah, Colorado, and New Mexico). At the other extreme, California and Texas have been divided into 28 and 32 localities respectively. Localities within states are not always contiguous. Prevailing charges may but do not always differ across localities within states for a service. In some states, like Massachusetts, locality boundaries separate urban and rural areas. In others, like Connecticut or Ohio, the localities are more nodal in character, including an urban center and its surrounding hinterland.

Geographic Variation in Medicare Charges

Medicare prevailing charges were obtained from the 1984 *Directory of Prevailing Charges* listing the charges for each locality for each service. Given the considerable differences in the sizes and natures of the localities, they cannot be considered comparable units of analysis. Therefore, fee screens for the various localities were assigned to the localities' constituent counties. When localities did not correspond to county units, the average of all charges for localities within the county was calculated to obtain a county charge figure.

The modifications required to evaluate Medicare charges by county are tolerable given the advantages of the county as a unit of analysis. First, the overwhelming majority of localities are counties or groups of counties requiring modifications in only a few cases. Second, data on elderly population required to weight differences in prevailing charges are readily available by county. Finally, as the building blocks of Metropolitan Statistical Areas, counties can be classified as metropolitan, urban, or rural.

A county was considered metropolitan if it was located within a Consolidated Metropolitan Statistical Area only; urban if it was located in a Metropolitan Statistical Area only; or rural if it was not located in a Metropolitan Statistical Area. Data on total population and percent of population 65 or older were recorded for each county.[11]

A considerable range of prevailing charges was observed for each physician service included in the study (Table 1). For example the lowest charge for an office visit was $10.30 while the highest charge was almost six times as great, $60.00. The range in charges for each service is much greater at the high end of the distribution of charges than at the low end, meaning that the distribution is positively skewed toward the higher end of the distribution. This implies that the mean charge is greater than the median charge.

Table 1
Range of Prevailing Charges by Service Type for Counties

	Service			
Charge Ranking	*Office*	*Home*	*Nursing Home*	*Hospital*
Highest	$60.00	$46.25	$30.95	$103.30
90th Percentile	33.00	25.00	20.50	72.20
Median	24.90	20.60	14.40	60.00
10th Percentile	12.40	18.15	10.30	50.00
Lowest	10.30	12.40	10.10	24.70
N = 3107				

Maps depicting the locations of counties in the lowest and highest deciles provide some indication of the geographic variation in charges for the four services (Figures 1-4). Charges for office visits by the elderly are highest ($33.00 or more) in Maine, Connecticut, North Carolina, southern Florida, metropolitan areas of Texas, and California. For home visits, the extreme southwest and northwest corners of the country have the highest reimbursement rates (at least $25.00). The metropolitan counties of Texas, Alabama, and almost all of southern Florida also fall into this category. The same regions are among the areas with highest charges for nursing home visits ($20.50 or more). The southwestern United States

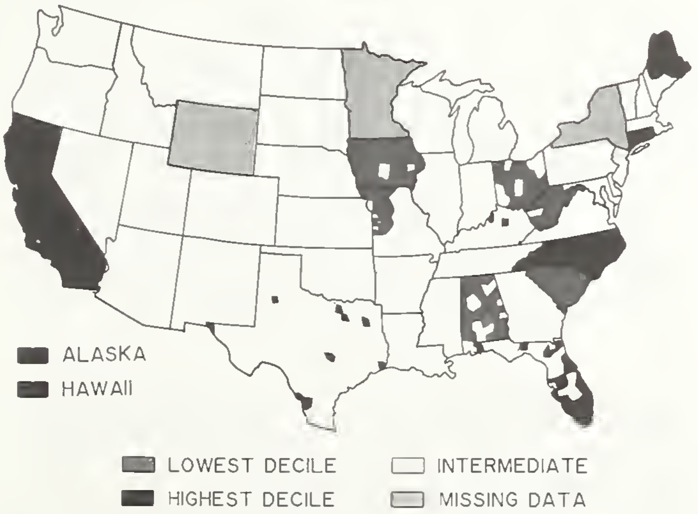

Figure 1
Medicare Prevailing Charge for Office Visit by County, 1984.

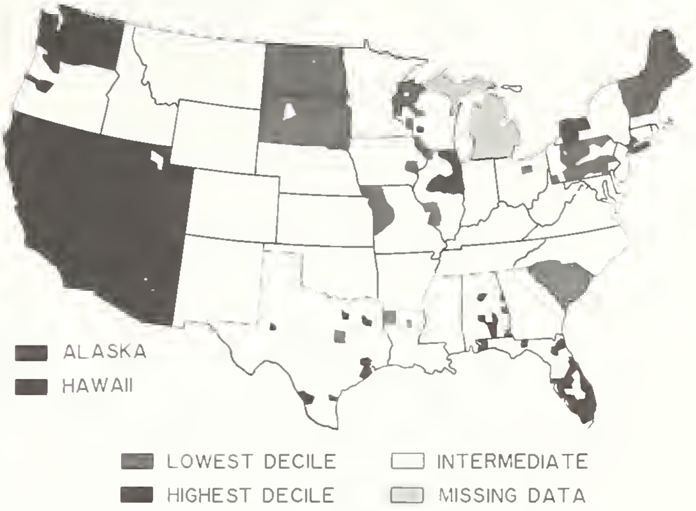

Figure 2
Medicare Prevailing Charge for Home Visit by County, 1984.

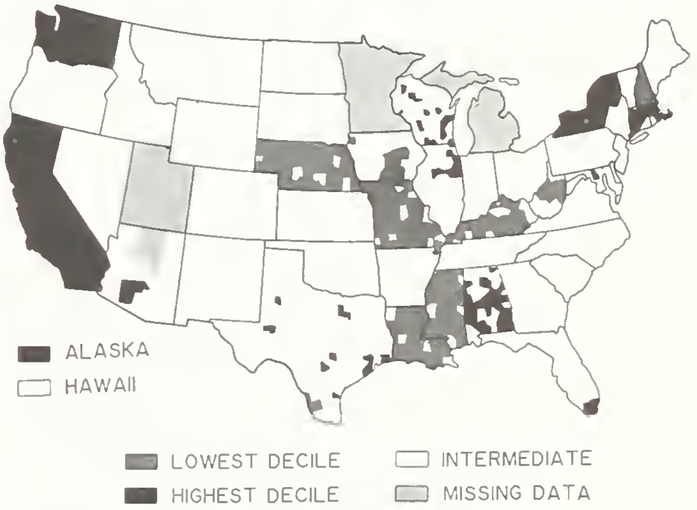

Figure 3
Medicare Prevailing Charge for Nursing Home Visit by County, 1984.

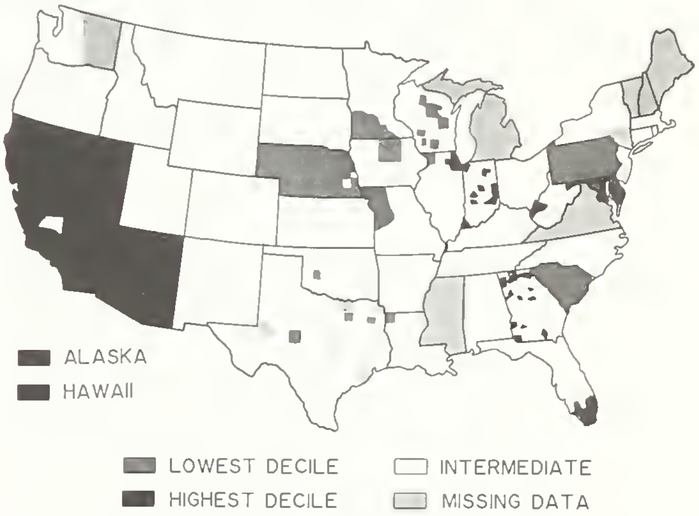

Figure 4
Medicare Prevailing Charge for Hospital Visit by County, 1984.

(California, Nevada, and Arizona) again emerge as an area of the country with high prevailing charges for physician hospital visits ($72.20 or higher).

Examining median charges for metropolitan, urban, and rural counties by major region provides another view of geographic patterns (Table 2). On average, counties in the western part of the country have the highest median charges in each category. In almost each case, they are considerably higher than the national median. In general there is a positive gradient in charges moving from rural to metropolitan counties except in the South. However, this exception probably reflects the fewer number of metropolitan centers in the South. Nationally, the median prevailing charge for an office visit is 18% higher in the metropolitan counties than in the rural counties.

Table 2
Median Medicare Prevailing Charges, 1984, for Counties by Region by Service Type

	Service			
Counties	*Office*	*Home*	*Nursing Home*	*Hospital*
All (N = 3107)	$24.90	$20.60	$14.40	$60.00
Rural (N = 2396)	24.90	20.60	14.40	56.80
Urban (N = 551)	23.90	20.70	14.40	61.90
Metro (N = 160)	25.00	24.75	16.50	61.90
Northeast	$20.00	$20.00	$16.00	$51.60
Rural	18.00	18.00	15.00	30.90
Urban	20.00	20.00	16.00	51.60
Metro	30.00	24.75	16.50	61.90
North Central	$18.00	$20.60	$12.40	$56.70
Rural	18.00	20.60	12.40	56.70
Urban	19.00	22.00	14.80	61.90
Metro	18.00	24.75	15.00	70.00
South	$25.00	$20.60	$14.40	$61.90
Rural	25.00	20.60	14.40	61.90
Urban	25.00	20.70	14.40	61.90
Metro	27.00	20.60	16.50	53.60
West	$25.90	$24.80	$14.40	$61.90
Rural	25.80	24.80	14.40	61.90
Urban	28.00	26.99	23.21	72.20
Metro	31.88	27.84	26.10	67.06

The Impact of Equalizing Charges

A uniform fee schedule might advance expenditure containment by collapsing the variations in charges observed everywhere across metropolitan, urban, and rural areas and by smoothing the observed variations between the major regions of the country if the uniform fee schedule sets charges at a rate lower than the overall average rate. While equalization of fees is a fairly straightforward matter, the impact of a particular fee structure on expenditure will be affected by the underlying distribution of population and by utilization. The distribution of population 65 or older in the U.S. is certainly not uniform and mirrors the general distribution of population. Areas like southern California and Florida are places of high charges and high elderly population. Areas like the Northeast may not exhibit the highest charges but contribute to program expenditure because of their large elderly populations.

A surrogate measure of the value of a particular fee schedule can be obtained by weighting the charge in each county for a service under the particular fee schedule by the county's elderly population and summing the weighted charges over all counties. This surrogate measure could be improved if data on utilization rates were available by county. Given the observed variations across metropolitan areas and their hinterlands within regions, one alternative fee schedule might be based on each state as a single charge district. If the charge were set at the current median for the state, a measure of program expenditure can be obtained by multiplying the state median by the elderly population and summing over all counties and all states. To eliminate within-region variation, the calculation can be repeated using the current regional median multiplied by the elderly population of each county in the region and summing over all counties and regions. Finally, to eliminate all variation in charges, the current national median could become the charge for each county.

When the respective sums for state, regional, and national fee schedules are compared against the existing fee regime, the degree to which equalization advances expenditure containment can be evaluated. Each of the three alternatives yields an expenditure measure as defined that is lower than the value for the current fee schedule (Table 3). In part, this is because the alternative fees were pegged at the median of a positively skewed distribution of charges. Because there are so many rural counties where charges are low, the median is more reflective of charges in rural areas. The metropolitan counties where large numbers of elderly reside experience greater fee reductions than the rural counties experience fee increases. Nevertheless, for all services except home care, a uniform national fee schedule does not yield the lowest expenditure measure weighted for population. The large numbers of elderly and relatively low charges in the Northeast and North Central regions compared to the West make it desirable to preserve their regional identities for expenditure containment at the expense of complete equalization of fees.

Table 3
Sum of Weighted Charges Across Counties Under Various Fee Schedules by Service*

(N = 3107)

Service	*Current*	*State*	*Regional*	*National*
Office Visit	$ 605,364,526	$ 560,393,452	$ 516,035,930	$ 574,448,951
Home Visit	614,350,176	557,547,643	521,579,422	507,180,460
Nursing Home Visit	428,648,764	408,734,392	346,876,775	348,187,378
Hospital Visit	$1,408,043,138	$1,312,413,450	$1,279,468,750	$1,312,380,120

*In cases where current charges were missing for a county, that county was left out of the calculation of weighted charges under all four schedules.

Conclusion

The foregoing analysis of Medicare prevailing charges reveals that there is considerable geographical variation in charges across the country. However, the distribution of charges reveals that there are few places where charges are extremely high and the elderly population large. The places may also be the areas where the cost of providing service is high. The appropriateness of these charges and of restructuring the entire geography of charges to address the situation in a few areas should be carefully examined.

An analysis of the impact of alternatives on a surrogate measure of expenditure suggests that preserving some geographic variation in charges may actually be desirable from an expenditure point of view. This is because a uniform fee schedule would be put in place in a differentiated space where the distribution of population would condition its impact. Certainly, many other fee schedules could be devised and evaluated for their local and regional impacts controlling for population and utilization where such data are available. These analyses would probably indicate that the appropriateness of a particular schedule of fees can be evaluated only in the context of a particular objective. The schedule that equalizes fees may not be the one that minimizes program expense or the one that minimizes impact on physician receipts.

The point of the illustration here is that in evaluating various geographical alternatives, medical care policymakers should not fall prey to a spatial fallacy. Although Medicare expenditures have a geographical expression, it is wrong to assume that these variations are responsible for program expense. It is unlikely that expenditure containment can be achieved by manipulating the geography of charges alone. The unintended consequences of the strong market response that any overhaul of the fee screen system is likely to produce need to be evaluated as the search for better means of reimbursing medical services for the elderly continues.

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50 Years Ago
From the *Journal of the Connecticut State Medical Society*
December 1938

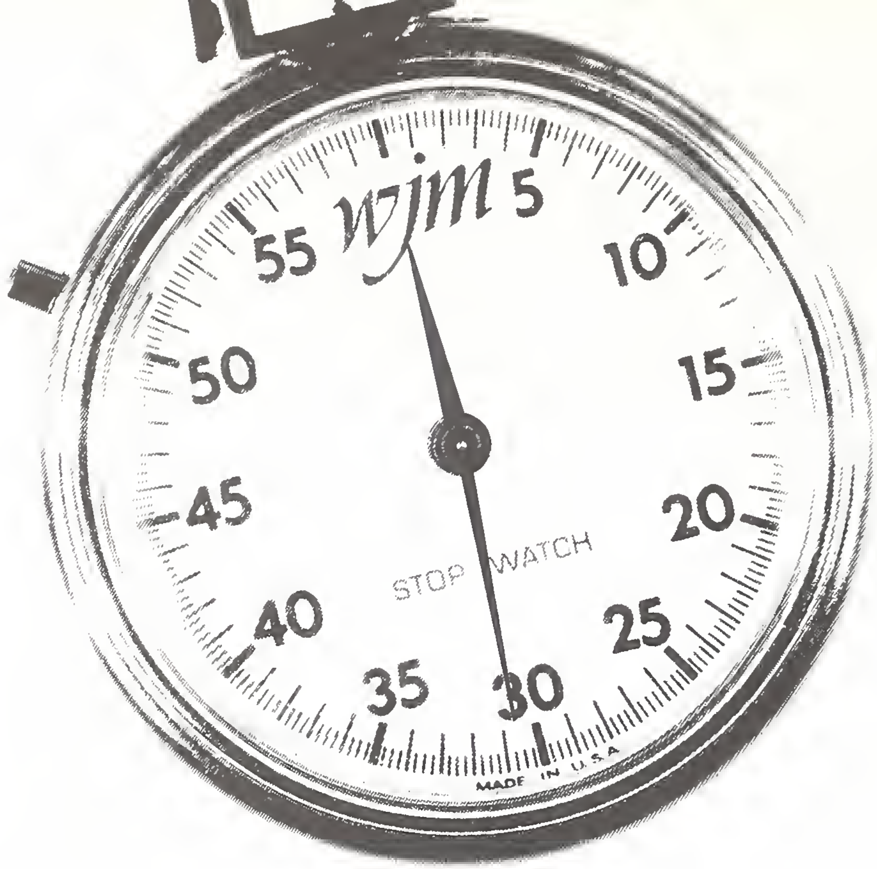
THE WISCONSIN STUDY OF SICKNESS INSURANCE

Sickness insurance involves the most complicated of all social legislation. It is complicated in its concept, in its application and in its administration. Knowledge of the insurance systems overseas that is available in this country is in a large part generalization or propaganda based upon a preconception of its desirability. The subject is discussed in the abstract, but the details of operation have been neglected.

In Wisconsin there have been political influences that for some time have sought a state sickness insurance scheme and The State Medical Society of Wisconsin has perforce directed its attention to the proposal. In order that accurate basic information might be available to its members the Society, last summer, sent its Executive Secretary, Mr. J. G. Crownhart, to Europe to study the operation of sickness insurance plans. Mr. Crownhart, who is admirably qualified, had rich opportunity to interview insurance administrators in many countries, physicians serving under sickness insurance, and the officials in the International Labour Office at Geneva.

The report based on this study presents a thoroughgoing and dispassionate inquiry into this moot subject, and is a great contribution to our knowledge. The State Medical Society of Wisconsin and Mr. Crownhart are to be complimented upon its production. It is recommended to all who would discuss sickness insurance, and should be required reading for every representative in Congress and the zealous advocates of the establishment of a system of sickness insurance in the United States.

— Editoral by Creighton Barker, M.D.



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The Economic Impact of AIDS in the United States

ANNE A. SCITOVSKY

Prologue: *In less than a decade, the dread disease acquired immunodeficiency syndrome (AIDS) has become a major influence on the consumption of medical care resources in the United States. In this paper, Anne Scitovsky discusses a subject on which she is acknowledged to be the leading American expert—the economic cost of AIDS. Scitovsky is currently the lone social scientist researcher at the Palo Alto Medical Foundation/Research Institute. The organization devotes most of its resources to the pursuit of biomedical research. Scitovsky, who holds a master's degree in economics from Columbia University, has for many years been contributing highly valuable studies to the medical literature. During World War II, she worked at the Social Security Administration with the late Selma Mushkin, one of the early pioneers in health economics. Before Scitovsky initiated her work on AIDS in 1984, she had carried out studies of changes in the costs of various illnesses, which enabled her to estimate the impact on costs of changes in medical technology. She also published a well-known study evaluating the various studies of medical care costs in the last year of life, warning against premature conclusions regarding wasteful or inappropriate use of medical resources that were being drawn from them. Long before The RAND Corporation launched its national health insurance study and documented that demand for medical care is greatly influenced by what people have to pay for it, Scitovsky had arrived at a similar conclusion in a much less expensive and smaller research study. The Palo Alto Medical Clinic had for years offered some of the employed groups that received care there comprehensive coverage without any cost-sharing requirements. When utilization reached unacceptably high levels, the clinic introduced a more modest package of benefits that required a patient cost-sharing contribution of 25 percent. Examining the results of this natural experiment in the late 1960s, Scitovsky determined that people who are required to pay for a portion of their medical care do indeed use it more sparingly than they would if it were free.*

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Nearly ten years have passed since the first cases of acquired immunodeficiency syndrome (AIDS) were reported in the United States. Because of the virulence and deadliness of the disease, which has generally required acute hospital care, serious concerns about its impact on health care costs were raised almost from the beginning. Yet only in the past three or four years have some data on its costs become available from a number of studies that have estimated the economic impact of AIDS. Even now, serious data gaps remain.

Because we appear to have reached the end of the first phase of the medical management of AIDS, with its heavy reliance on inpatient hospital care, it is timely now to review the studies and estimates relating to the costs of the epidemic and its economic impact that have been made to date. Although the evidence is not yet conclusive, new methods of medical treatment, notably the use of drugs such as zidovudine (AZT), appear to make it possible to treat many persons with AIDS (PWAs) on an ambulatory basis. In addition, providers of care, third-party payers, and some local communities are making concerted efforts to find ways of managing the care of PWAs in an ambulatory setting. To evaluate the effect of both the new medical tools available for the treatment of PWAs and the new methods of managing their care, it is useful to review past studies and estimates so that these data can be used as a kind of bench-mark against which to set the costs of AIDS in this new phase of providing medical care to PWAs.

In this article I review the principal studies and estimates to date of the personal health care costs of PWAs, how these costs compare with the costs of some other diseases, and the expected impact of the epidemic on hospitals. After very brief sections on estimates of direct nonpersonal costs of the epidemic (that is, for research, screening of human immunodeficiency virus, or HIV, infection; blood screening and replacement; education; information; and various support services) and of indirect costs (that is, the value of lost output due to illness and premature death), I discuss the limitations of the estimates of personal health care costs of PWAs made to date and the major data gaps that make better estimates difficult. I conclude with some suggestions regarding the type and contents of future studies of the costs of AIDS.

The Personal Health Care Costs of People With AIDS

Empirical studies and estimates. All the empirical studies of the personal health care costs of PWAs made to date have been retrospective and based on patients' medical and/or financial records. Seage and colleagues in Boston, Scitovsky and colleagues in San Francisco, and Berger in Maryland conducted studies in which data were collected and analyzed for a number of cohorts of PWAs.[1] The California State Department of Health Services, using MediCal (Medicaid) claims data, has made two estimates of the lifetime costs of PWAs in California in 1984-1985 and 1985-1986.[2] A study published in summer 1987 by Andrulis and colleagues reports on a survey of 169 metropolitan public and private teaching hospitals that treated PWAs in 1985.[3] They collected and analyzed data on hospital utilization (that is, number of patients and admissions, length-of-stay, and total inpatient days) by risk group, and, for smaller subsamples, data on costs, revenues, and sources of payment. In addition, a dozen or so other empirical studies are currently being conducted or have been completed but have not yet been published. Additional data on costs of treating PWAs can be found in unpublished reports by state and local health departments, hospital associations (such as the Hospital Council of Southern California and the New York Health and Hospital Corporation), and some individual hospitals.

Useful as these studies and data are, none of them covers all medical services used by PWAs, many of the studies being limited to inpatient services or at best to inpatient and outpatient services provided by hospitals. In addition, many of them report data for relatively small numbers of cases. The Boston study by Seage, for example, included forty-five cases; the Maryland study by Berger, twenty-six cases. The San Francisco study by Scitovsky had inpatient and outpatient data for 201 cases, data on 445 hospital admissions of PWAs, and data on lifetime hospital costs of eighty-five cases.

Despite this scarcity of data, five estimates have been made of the medical care costs of PWAs in the United States. The first (which received a great deal of publicity at the time) was made in early 1985 by Ann Hardy and colleagues at the Centers for Disease Control (CDC).[4] They estimated the lifetime hospital costs of the first 10,000 patients with AIDS reported in the United States at about $1.5 billion, or $147,000 per AIDS patient.

In early 1986, Scitovsky and Rice, at the request of the CDC, made estimates of the direct and indirect costs of AIDS in the United States in 1985, 1986, and 1991.[5] Because of the uncertainty of much of the data, three estimates of the direct personal costs of PWAs were made for each of the three years—low, medium, and high. However, for each of the three years they used the CDC estimates of the number of PWAs alive at any time during the year, increased at the suggestion of the CDC by 20 percent to take into account underreporting. They consider their medium estimates the best possible at the time: $630 million in 1985, $1.1 billion in 1986, and $8.5 billion in 1991, all in current dollars.

More recently, an estimate was made by Anthony Pascal, of The RAND Corporation.[6] In connection with estimating the impact of the AIDS epidemic on the Medicaid program for the Health Care Financing Administration (HCFA), he made three estimates of the total costs of treating PWAs in the five-year period 1986 to 1991. His estimates range from a low of $15.4 billion to an intermediate estimate of $37.6 billion (which he regards as the most likely) and a high of $112.5 billion. Another recent estimate, by Andrulis and colleagues for 1985, based on their findings from the hospital survey mentioned earlier, put total hospital inpatient costs of PWAs in the United States at $380 million.

The latest estimate has been made by Hellinger, who states that it takes account of "the wider use of AZT," although he gives no details regarding his assumptions about the effect of the use of AZT on costs.[7] He forecasts the personal medical care costs of PWAs to be $2.2 billion in 1988 and $4.5 billion in 1991.

There are several reasons for the wide differences in these estimates. One source of difference is the fact that some of the estimates are incidence-based (Hardy, Pascal, and Hellinger) while others are prevalence-based (Scitovsky and Rice, Andrulis). Incidence-based estimates attribute all the medical care costs incurred over a person's lifetime to the year when the patient was diagnosed; while prevalence-based estimates cover the costs of all medical care received by persons with the disease in a given year, regardless of when the condition was diagnosed and of whether they lived the full twelve months, died during this period, or were newly diagnosed in the course of the year. This source of difference, however, is not a major obstacle to comparisons when average life expectancy is relatively short, as it has been in the case of AIDS at least until very recently (about thirteen months from diagnosis to death).

The principal reasons for differences between the estimates are differences in the underlying assumptions regarding (1) medical care costs per PWA and (2) the projected number of cases with AIDS. Hardy's estimate of average lifetime hospital costs of $147,000 for the first 10,000 cases of AIDS reported in the United States (with an average life expectancy of thirteen months) compares with Pascal's estimate of lifetime costs of $94,000 in the period 1986-1991 (assuming an average life expectancy of twelve months) and Hellinger's estimate of $61,800 in 1991 (assuming an average life expectancy of twenty-four months). The medium estimate by Scitovsky and Rice for 1991 can be converted to an estimated lifetime cost of about $70,000 (assuming an average life expectancy of thirteen months). The latter two estimates are in 1985 prices, that by Pascal apparently in 1986 prices.

Differences in the projected number of cases of AIDS parallel the differences in estimated lifetime costs per case of AIDS. Scitovsky and Rice used the projections of the CDC, increased by 20 percent to take account of underreporting. Pascal, using a different forecasting model, arrived at an estimate of cumulative cases by 1991 that is about 50 percent higher than the CDC estimate and about 23 percent higher than the adjusted CDC estimate used by Scitovsky and Rice. By contrast, Hellinger, using yet another forecasting model, estimated about 18 percent fewer newly diagnosed cases for 1991 than the CDC estimates indicate, allowing for a 20 percent increase in both his and the CDC's estimate for underreporting.

The Hardy estimate of lifetime hospital costs is now generally regarded as much too high. It was based on very fragmentary data, and there is considerable evidence that the medical care costs of treating PWAs have declined since the early days of the epidemic. For example, Kizer (in the studies cited earlier) found that average lifetime costs (over an eighteen-month average life span) for PWAs in California declined from $91,000 in 1984-1985 to $70,000 in 1985-1986. But statistically sound estimates of lifetime costs of PWAs are currently not possible, and all we can say is that they range somewhere between $60,000 and $90,000, with a strong possibility that they are closer to the lower range since all (with the possible exception of Hellinger's) are based on data from retrospective studies that do not yet reflect more recent changes in treatment, which may be cost-saving to some extent. With regard to the projections of the number of AIDS cases in the next five or more years there is also considerable uncertainty, and any cost estimates therefore must be based on a range of estimates of the number of future cases.

Because the estimates of the national costs of AIDS by Scitovsky and Rice lie about halfway between the high estimates of Pascal and the low estimates of Hellinger, I use them for comparing the cost of AIDS with other health care expenditures and for evaluating the impact of AIDS on the nation's hospitals.

Comparing the costs of AIDS with other health care expenditures. Scitovsky and Rice's medium estimate of $8.5 billion represents 1.4 percent of estimated total personal health care costs in 1991. By comparison, their medium estimate for 1985 represents a mere 0.2 percent and that for 1986, 0.3 percent of personal health care expenditures in these two years. In 1985 and 1986, their estimated annual medical care costs of PWAs, high as they are, are considerably lower than those of patients with some other diseases. For example, based on 1980 data, they have estimated that persons with end-stage renal disease had total expenses of about $2.2 billion; persons injured in automobile accidents, $5.6 billion; with cancer of the digestive system $3.4 billion; cancer of the lungs, $2.7 billion; and cancer of the breast, $2.2 billion.[8]

Comparing their estimates for 1991 with estimates of the medical care costs of some other diseases in 1991 is rather problematic since the base year for other diseases is 1980, and the prevalence of these conditions is bound to change over this eleven-year period. But assuming neither drastic changes in the prevalence nor in the treatment of other conditions, they believe that it is likely that the medical care costs of PWAs will exceed those of patients with cancer of the digestive system, cancer of the lung, and cancer of the breast, and be exceeded only by the costs of persons injured in automobile accidents.

Data on the lifetime costs of other diseases are not available. However, Scitovsky and Rice estimated, on the basis of Medicare data, that the lifetime costs of persons with end-stage renal disease who are on dialysis are about $158,000, assuming an average lifetime of four years for these patients. Thus, the lifetime costs of these patients are considerably higher than those of PWAs.

The impact of AIDS on hospitals. Because inpatient hospital care has been and continues to be the driving force behind the costs of AIDS, it is important to examine the likely impact of the epidemic on hospitals. Scitovsky and Rice's $8.5 billion estimate of total medical care costs of PWAs in 1991 assumes 5.9 million hospital days. This is equivalent to 2.6 percent of all hospital days used in 1985, almost four times the number of hospital days used in 1985 by patients with cancer of the colon (1.6 million) or cancer of the breast (1.5 million), and twice the number of hospital days used by patients with cancer of the lung (2.8 million). Only patients with acute myocardial infarction (7.2 million days), pneumonia (6.8 million days), and normal infant deliveries (12.6 million days) used more inpatient days in 1985 than their estimate for AIDS patients in 1991.[9]

Their estimate of 5.9 million hospital days needed by AIDS patients translates into a requirement of just over 16,000 beds in 1991, which represents 1.2 percent of all hospital beds available in 1985. Although there is an excess of hospital beds in the United States (possibly as much as 20 percent), the AIDS epidemic will impose a serious strain on hospitals, especially public hospitals, in metropolitan areas with large numbers of PWAs. On the basis of Scitovsky and Rice's assumptions regarding hospital use by PWAs and the CDC estimates of the prevalence of AIDS in New York and San Francisco in 1991, increased again by 20 percent to account for underreporting, I have estimated that in 1991 AIDS patients would require about 2,100 beds in New York, or about 5 percent of all hospital beds in the New York metropolitan area in 1985, and 648 beds in San Francisco, or about 9.5 percent of all hospital beds in that city in 1985. Other metropolitan centers such as Los Angeles, Washington, D.C., Miami, Houston, and Newark would face similar demands on their hospital systems.

Public hospitals in these centers, however, will face the most serious problems if they continue to provide inpatient care for the same percentage of PWAs they currently care for and if they have the same number of hospital beds as they do now. I have estimated (again using Scitovsky and Rice's assumptions regarding hospital use) that under these conditions PWAs in 1991 would require between 10 percent and 13 percent of all public hospital beds in New York City and about one-third of all beds in San Francisco General Hospital. In fact, according to a report presented at the Fourth International Conference on AIDS in Stockholm in June 1988, 30 percent of all acute beds in one public hospital in New York already are occupied by patients suffering from HIV-related illnesses. Clearly there is a limit to the number of beds that public hospitals can provide for PWAs because they have an obligation to provide many other essential medical services to their cities' populations.

In addition to the strain on their physical resources, the public hospitals also face the most serious financial problems posed by the AIDS epidemic because of the high percentage of their AIDS patients either who are covered by Medicaid, which generally reimburses the hospitals for less than their costs, or who are self-pay, which frequently turns into uncollectible bills. According to a 1987 report, of the PWAs hospitalized in the public hospitals of the New York Health and Hospital Corporation, 70 percent were covered by Medicaid, 6 percent by Blue Cross, 1 percent by Medicare, less than 1 percent by commercial insurance, and 12 percent were self-pay.[10] Somewhat earlier data collected by the West Bay Hospital Conference (which collects data for San Francisco Bay Area hospitals) showed that of the PWAs hospitalized at San Francisco General Hospital, 71 percent reported MediCal (Medicaid) as their expected source of payment, 3 percent Medicare, 4 percent other public programs, 15 percent private insurance, and 8 percent self-pay. By contrast, the corresponding figures for PWAs hospitalized in other San Francisco hospitals (including a Kaiser hospital) were 16 percent MediCal, 5 percent Medicare, 2 percent other public programs, 75 percent private insurance, and 2 percent self-pay.[11] Andrulis and colleagues found that of the responding hospitals, public hospitals reported 62 percent of their AIDS admissions covered by Medicaid, compared to 35 percent of the admissions in private hospitals; 1 percent covered by Medicare compared to 3 percent of the admissions in private hospitals; 7 percent compared to 45 percent covered by private insurance; 18 percent compared to 13 percent self-pay; and 12 percent compared to 4 percent with other payment arrangements.

While these data clearly indicate the need for community hospitals to play a greater role in providing inpatient services to PWAs, it is equally clear that in view of the financial and insurance situation of PWAs currently being treated by public hospitals, private hospitals may not be eager to treat large numbers of AIDS cases. Moreover, there is some evidence that the proportion of PWAs covered by private insurance has been declining, with payment responsibilities shifting to the public sector, primarily Medicaid and local communities.[12] This highlights the increasingly urgent need for comprehensive planning on how to finance medical care for PWAs. One way or another, the medical care costs of PWAs will be met. But unless the present piecemeal system is drastically reformed, the AIDS epidemic will cause severe economic hardships for and place disproportionate financial burdens on not only many PWAs and their families but also public hospitals and local communities.

The Direct Nonpersonal Costs Of The HIV Epidemic

To date, Scitovsky and Rice have made the only estimates of the direct nonpersonal costs of the HIV epidemic—that is, the costs of research; blood screening and replacement; screening of individuals for HIV infection; and health education, information, and support services.[13] Their medium estimates, in current dollars, range from $319 million in 1985 to $542 million in 1986 to $2.3 billion in 1991. However, these estimates should be regarded with great caution. The data available to estimate current costs of these services are even more fragmentary than those available for estimating the direct medical care costs of PWAs. It is virtually impossible to project these costs because of the uncertainties of future policy regarding the provision of these services. For example, costs will differ enormously depending on the extent of screening for HIV infection, the breadth of educational programs, and the funds made available for research of all types.

The Indirect Costs Of The HIV Epidemic

Both Hardy and colleagues and Scitovsky and Rice have made estimates of the indirect costs of the HIV epidemic—that is, the value of lost output due to illness and premature death.[14] Hardy estimated the indirect costs of the first 10,000 cases of AIDS in the United States at $4.8 billion, or more than three times her estimate of health care costs. Scitovsky and Rice's estimates range from $3.9 billion in 1985 to $7.0 billion in 1986 to $55.6 billion in 1991, or more than six times their estimates of personal health care costs. Most of the indirect costs (93 percent) represent losses due to premature death. While their estimates of indirect costs represent only 1.2 percent and 2.1 percent of the estimated total indirect costs of all illness in 1985 and 1986, they rise to close to 12 percent of the estimated total costs of all illness in 1991.

These estimates, too, should be regarded as very tentative because there are no data on the earnings of PWAs. There is some evidence that of the two major risk groups, homosexual and bisexual males and intravenous (IV) drug abusers, the former have above-average earnings, while the majority of the latter are likely to have either no or below-average earnings or earnings from illegal sources such as drug dealing, theft, and prostitution. We assumed that PWAs had the same average earnings as others in their age and sex group. But this assumption is not based on any hard data.

Limitations Of The Estimates And Major Data Gaps

Any estimates of the costs of AIDS made on the basis of currently available data have serious limitations. I already have indicated the limitations of estimates of the direct nonpersonal costs and of the indirect costs of the epidemic. Here I discuss the limitations of the data on the direct personal medical care costs of PWAs and, more generally, of persons infected with HIV.

Retrospective nature of the data. As already mentioned, all the estimates (with the possible exception of Hellinger's) are based on data from retrospective studies. Thus they do not include persons with two conditions that were added to the definition of AIDS by the CDC as of September 1987: the so-called wasting syndrome and dementia. No good data are available on how many cases this will add to the count of PWAs, although it is estimated that it may increase the total number by 10 to 15 percent. But there are no estimates available of the medical care needs and costs of persons with these conditions.

Uncertainty of projections of the number of AIDS cases. Even estimates of the number of persons with the conditions covered by the pre-Sepember 1987 definition of AIDS are uncertain. Some epidemiologists think the CDC underestimates the number of cases that will occur over the next five years. As mentioned earlier, the intermediate estimate by Pascal of The RAND Corporation for 1991 is about 50 percent higher than that made by the CDC. Conversely, the CDC estimate may be too high, as Hellinger believes. His view is shared by epidemiologists in the San Francisco Public Health Department, whose projections of the prevalence of AIDS in San Francisco are considerably below those of the CDC. The former estimates that there will be 3,822 PWAs alive at any time in San Francisco in 1991, while the CDC estimates 8,120. (Note: this estimate was made in 1986.) The difference between the two estimates reflects differences in the methodologies the two organizations use for projecting the course of the AIDS epidemic. The CDC bases its projections largely on past trends. By contrast, the San Francisco Public Health Department, which has data from a 1978 hepatitis B vaccine study on the number of males infected with HIV, bases its estimates on estimates of the percentage of HIV-infected persons who will contract AIDS in future years. The CDC is planning a series of surveys to determine the numbers of HIV-infected persons in twenty metropolitan centers with large numbers of PWAs and in ten low-incidence areas to be able to make more accurate projections of the future course of the epidemic.

Changes in distribution of PWAs. Another element of uncertainty that complicates cost estimates is the possibility of a change in the distribution of PWAs by major risk group. As the percentage of PWAs who are IV drug abusers increases, costs may rise because a higher percentage of them develop *Pneumocystis carinii* pneumonia (PCP), which is more expensive to treat than Kaposi's sarcoma, more often found among male homosexuals.

Lack of outpatient data. We are slowly beginning to get good data on inpatient hospital costs. But data on the costs of ambulatory care, such as for physician outpatient and outpatient ancillary services, home health care, counseling, and similar support services are almost totally lacking.

Lack of information on payers. An important data gap is the almost total lack of information on who is paying for the medical care costs of PWAs—private insurance, public programs such as Medicaid and Medicare, the patients themselves, or local communities whose public hospitals are the main source of services for the under- and uninsured. A frequently cited estimate puts the burden on Medicaid at 25 percent of total medical care costs of PWAs; however, there is little basis for this estimate. Pascal's estimates of the cumulative Medicaid costs for AIDS treatment for 1986 to 1991 range from $2.3 billion (or 15 percent of total national AIDS costs) to $10.2 billion (or 27 percent of total costs) to a maximum of $47.4 billion (or 42 percent of total costs).[15]

Others infected with HIV. Last, but not least, the medical care costs of PWAs are only part of the medical care costs associated with the HIV epidemic. Thus cost estimates made to date do not include costs of persons with AIDS-related complex (ARC) nor of those who are infected with HIV and have either very mild symptoms or no symptoms but are worried and seek medical care and advice. Estimates of persons infected with HIV range from half a million to as high as two million; however, I know of no estimates of the number of these persons who use the medical care system nor of the type of care they obtain.

Similarly, there are no hard data on the number of persons with ARC. They have been variously estimated at two to five times the number of PWAs, and some estimates put them as high as ten times the number of PWAs. The only estimate of the costs of care of persons with ARC that I have found to date comes from the latest study of the California Department of Health Services.[16] They estimate monthly MediCal costs of persons with ARC at $652, which converts to $1,043 in billed charges (compared to $3,889 a month for persons with AIDS). My rough estimates on this basis show that if we assume that in 1986 there were four persons with ARC alive at any time during the year for every person with AIDS, their medical care costs would have amounted to about $1.6 billion, or somewhat more than the Scitovsky and Rice estimate of the medical care costs of PWAs in that year. A more conservative estimate of two persons with ARC for every one PWA would come to $787 million, or about 70 percent of their 1986 estimate of the costs of PWAs. Thus it is clear that the total personal medical care costs of the epidemic far exceed the costs of persons with full-blown AIDS as defined by the CDC. If we add to the personal medical care costs the direct nonpersonal costs for research, screening, education and information, and miscellaneous support services, the Scitovsky and Rice estimate of $8.5 billion for personal health care costs of persons with full-blown

AIDS in 1991 may well have to be doubled or even tripled.

Recommendations For Future Studies

Currently available data do not permit reliable estimates and projections of the personal health care costs of persons infected with HIV. Because they come from retrospective studies, they do not reflect more recent changes in the treatment and management of the disease. Moreover, they are generally limited to data on inpatient hospital care or at best inpatient and outpatient hospital care and shed little light on the costs of ambulatory care. Finally, they come primarily from a few geographic areas, which may not be representative of costs in other areas and the nation as a whole. To make plans for meeting the medical resource and financial needs of persons infected with HIV, better and more comprehensive data on their use and costs of medical care are essential. What follows are my recommendations regarding the type and content of future studies of the costs of AIDS and HIV infection in general.

Prospective studies. First and foremost, future studies should be prospective studies in which patients are followed for at least one year but preferably longer. These studies should be conducted in geographically representative areas and obtain detailed data on the use and costs of all services used rather than only of data on hospital services.

Only prospective studies can reflect the changes that are occurring in the medical treatment of PWAs. Although AZT has now been in fairly wide use for about a year, no firm data on its effects on costs exist to date, mainly because it has not been in use long enough. While it appears to reduce medical care costs of PWAs in the short run by reducing inpatient hospital use, it is no cure, and although it seems to prolong life expectancy, patients are still likely to die and probably to incur high costs in the lasts months of life just as AIDS patients who died in the past did.

Similarly, only prospective studies can capture the effect on costs of new methods of managing the care of PWAs. The experience with AIDS in San Francisco has shown that medical care costs can be held down when appropriate community support systems exist that enable patients to be treated at home. However, I fear that the extent to which this "San Francisco model" can be exported to other areas is limited. PWAs in San Francisco are predominantly male homosexuals; San Francisco's well-organized gay community rallied to the epidemic. Whether similar community services can be organized in centers such as New York City, where more than one-third of PWAs are IV drug abusers, is questionable. Moreover, the agencies that provide out-of-hospital care in San Francisco rely heavily on volunteers, who may be more difficult to recruit in other areas. Even in San Francisco, it is not certain that the present system will be able to cope with the larger number of patients expected in the course of the next few years.[17] The need for volunteers will increase, and some of the current volunteers may "burn out" or contract AIDS themselves. If paid personnel has to be substituted for volunteers, home care may become no less expensive than institutional care.

The results of various experiments with case management of PWAs by third-party payers also will need careful evaluation. Under the ideal version of this sytem, which can take many forms, beginning with nothing more than hospital discharge planning, a medical worker (usually a nurse) is placed in charge of a patient's total course of treatment so that services are synchronized. Wherever feasible, outpatient care is substituted for hospital care and paid for by the patient's insurance policy even when such ambulatory care services are not normally covered by the policy. Again, it is not at all clear yet that this system necessarily is cost-saving, although it may well improve the quality of care of the patient.

Finally, prospective studies should include not only persons with full-blown AIDS but also those with less severe manifestations of HIV infection such as patients with ARC and even asymptomatic seropositive persons. If the current trials of the use of drugs such as AZT for HIV-infected patients with less than full-blown AIDS prove successful, these persons may become major users of medical care and add considerably to the overall medical care costs of the epidemic.

The National Center for Health Services Research and Health Care Technology Assessment (NCHSR) plans to sponsor prospective studies aimed at obtaining such use and cost data. In addition, it will be interesting to learn what the various demonstration programs sponsored by the Health Resources and Services Administration and The Robert Wood Johnson Foundation will show regarding the effects on costs of different ways of managing the care of PWAs.

Data on payers for care of PWAs. It is essential that future studies obtain data on the insurance coverage of PWAs and other HIV-infected persons. This is increasingly important as the percentage of PWAs who are IV drug abusers continues to increase as it has done in recent years (from 15.3 percent of all reported cases in the year ending July 11, 1987, to 22.2 percent in the year ending July 11, 1988).[18] These patients are less likely to have private insurance than homosexual and bisexual males, and thus the costs borne by public programs and local communities may rise. Similarly, if life expectancy of PWAs increases, more of them may qualify for Medicare, which in the past has paid very little of the costs of PWAs because most patients did not live the two years it takes to qualify under the Medicare disability program; or they may become dependent on Medicaid as they lose their private insurance coverage. Alternatively, if their quality of life improves so that they can continue to work longer, more of them may retain their private insurance.

Finally, if HIV-infected persons other than those with full-blown AIDS become heavier users of medical care than they have been to date, this will raise serious financing problems. If drugs become a relatively important item in their costs (as seems likely), many of these patients may have difficulties paying for them since private insurance generally does not pay for out-of-hospital drugs and prescriptions. At the same time, unless such persons are automatically declared disabled for purposes of Medicare coverage, their costs are also not paid by Medicaid.

Prevalence of HIV infection. To make possible better projections of the number of persons with AIDS, better data on the prevalence of HIV infection are urgently needed. As mentioned earlier, the CDC is planning a series of surveys to obtain data on the extent of HIV infection in different geographic areas and among the different population groups at risk of HIV infection. It is to be hoped that despite the difficulties of conducting these surveys—difficulties due largely to the problems of confidentiality that this particular disease raises—they will be successful.

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Editorials

Community Acquired Pneumonia in AIDS

We are now at the point where virtually every practicing physician can expect to encounter AIDS patients in his or her practice. The Center for Disease Control (CDC) now reports in excess of 65,000 cases as of 20 June 1988.[1] CDC projects 365,000 cases by the end of 1992, with 263,000 cumulative deaths by then. In 1992, alone, there will be 80,000 new cases and 66,000 deaths. One hundred seventy two thousand cases will require medical care in 1992.[2] In Connecticut, the State Health Department surveillance of AIDS has now accumulated a total of 821 patients of whom 501 (61%) have died.[3] The state has projected a range of 1705-2420 cases by the start of 1991. There will be as many as 1123 additional cases diagnosed during 1991, up to 704 deaths during that year, and a total of up to 2211 cumulative deaths by the end of 1991.[4]

Although AIDS cases were first associated with *Pneumocystis* pneumonia the variety of infections with which AIDS patients have been associated has steadily increased since the earliest reports of 1981.[5] Serious infections have been reported due to *Toxoplasma gondii, Cryptococcus neoformans, Nocardia, Candida* species, *Herpes simplex, Cytomegalovirus, Papillomavirus, Cryptosporidiosis,* and *Mycobacterium avium intracellulare* among others.

Recent case reports have emphasized the T-cell defect in AIDS and have reported infections associated with this abnormality including listeriosis,[6] tuberculosis,[7] atypical mycobacteriosis,[8,9] and salmonellosis.[10]

A variety of bacterial infections have been reported with AIDS, stressing the fact that the B-cell lymphocytic immune system is also involved. Pneumococcal infection has headed the list, but *Hemophilus influenzae, Streptococcus pyogenes*, and *Klebsiella pneumoniae* infections have been reported as well.[11,12]

An excellent review has recently appeared with respect to bacterial and fungal pneumonias in AIDS.[13] Reported incidence of bacterial pneumonia in AIDS apparently varies widely. Various papers in the literature have cited an incidence of from 3% to 31% of AIDS patients having community acquired bacterial pneumonias. Frequently, there is a coincidence of *Pneumocystis* pneumonia, a situation that can be very difficult to sort out clinically.

A majority of community acquired bacterial pneumonias seen in AIDS patients appears to be caused by *Streptococcus pneumoniae* or *Hemophilus influenzae.* The clinical presentation of *Streptococcus pneumoniae* chest infections in AIDS patients is generally indistinguishable from that which occurs in a normal host. However, it appears that the clinical course is more severe in AIDS patients and various complications such as bacteremia and empyema may be more common among AIDS patients with pneumococcal pneumonia. Unfortunately these individuals are unable to mount an adequate antibody response in the course of their disease, or following immunization with pneumococcal vaccine.

Recurrent episodes of bacterial pneumonia appear to be common in AIDS patients, again underscoring the unusual susceptibility which these patients have to this kind of infection. It has been estimated that the incidence of pneumococcal disease in AIDS is similar to that seen among patients with sickle cell disease, 0.5% to 2%; whereas the incidence of pneumococcal disease in the normal population may be only 20 per 100,000.[14] Whether those with HIV infection, but not AIDS, are at greater risk for pneumococcal infection, or whether there are suggested differences in incidence for those belonging to different risk groups (IV drug abuse *v* gays) has not been settled.[14]

The paper by Pesanti, et al[15] in this issue of *Connecticut Medicine* calls attention to the fact that pneumococcal illness in patients belonging to high risk groups for HIV infection may herald underlying immune deficiency, and that it is important to search for evidence of ARC or AIDS with appropriate history and laboratory studies. This is particularly true for patients presenting with pneumococcal infection who are near the median age group for AIDS, approximately 35 years of age and who have an "at-risk" epidemiologic background. At this point, it is also apparent, that *any* unusual infection or malignancy should cause the clinician to initiate a search for AIDS risk-factors. There is little doubt that the spectrum of disease associated with HIV infection will continue to expand with time, and that many of the important observations will be made at the bedside by the practicing clinician.

David P. Johnson, M.D.

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Sharing Blood-Borne Viruses and Illicit Drug Users

Persons who inject illicit drugs have almost invariably shared uncleansed injection equipment with others, at least on some occasions. Accumulating evidence strongly suggests that shared injection equipment rapidly and efficiently transmits HIV and hepatitis B infection throughout an interacting population, once one of the participants has become infected. The transmission of most other infectious organisms has not been closely monitored but we must entertain the likelihood of roughly equivalent efficiency for some examples.

Those who inject illicit drugs share their equipment for convenience, or for ritual, or for symbolic reasons. In addition, many drug users report that they do not own or do not carry their own equipment because it is illegal to do so (in 11 states including Connecticut) and it subjects them to arrest if they are stopped and searched. Injection equipment is generally shared among drug users when they cluster either as friendship groups or in commercial establishments called shooting galleries. Many addicts, once they gain access to their drug of choice, move rapidly to a relatively safe site to "shoot up." Their need is urgent and requires, of course, that they have access to a needle and syringe or an adequate substitute. In addition, some addicts have so abused the condition of their accessible veins that they need the help of a skilled person to inject them successfully. Such skilled injectionists are often stationed at formal or informal shooting galleries. Urgency, indifference, or ignorance of hygiene, or of risk reduction procedures, and sometimes limited access to cleansing materials seemingly determine the over-riding feature of shooting galleries (and more informal needle-sharing settings)—injection equipment is usually not cleansed before or after use.

People who use illicit drugs by injection can be educated on the need to clean their equipment before and after use, and some programs have been instituted to provide them with inexpensive but effective cleaning materials that are accessible to them when needed, by stocking shooting galleries and by providing individuals with easily portable and appropriately refreshed personal supplies. The public has been reluctant to support these programs on a significant scale.

A rational and allied program would be to decriminalize the possession of injection equipment. Legally obtained needles and syringes are very inexpensive. Access need not to be totally deregulated. Two regulation alternatives have been proposed.

Physicians or certain other health care providers could be authorized to prescribe needles and syringes for persons under their care who are judged to be addicted to injected drugs. Those persons could then legally possess and carry their personal injection equipment. What of those who were not under health care and who were too alienated to seek such care? Specially trained public health workers could be athorized to establish outreach networks in high incidence neighborhoods that would reach or attempt to reach alienated clientele and those public health workers could be given the legal authority to prescribe needles and syringes and to authorize their possession.

Several consequences might flow from such programs. The inventory of injection equipment available in the community would rise. That, of course, is one objective of the program. Would people nevertheless share? Would the right to possess and carry duly-prescribed injection equipment increase accessability for those not yet addicted (either recreational users or novices)? Those questions cannot be answered yet in detail. Needles and syringes seem to be readily accessible in all communities. Some are purchased illegally from legitimate or illegitimate vendors, some are stolen from health-care providers or their garbage, and some are rented in shooting galleries. Access appears to be easy and providing access appears to be highly profitable for entrepreneurs. In the absence of profit, we cannot necessarily predict for each community whether accessibility will increase or decrease. Accessibility, however, as opposed to the right to carry personal equipment, appears not to be the principal reason for sharing. Recreational users and new recruits are both all too common today. There is no direct evidence to suggest that this new policy would increase or decrease their numbers. They should, however, have a much better chance of remaining in good health.

Unless linked to continuing and appropriate educational messages on not sharing injection equipment *and* on the need to use clean equipment, even if personal, both sharing of equipment and of viruses may well continue to occur. The frequency, however, ought to be greatly reduced.

If it were to become legal to prescribe needles and syringes for addicts, the authorized health-care providers would find themselves in a new ethical setting. Currently those who care for persons who cannot or will not give up using drugs by injection may be helpless to save their clients, and their clients' contacts, from death by HIV or hepatitis B infection, especially if the health-care providers lack the staff or funding to provide effective education and couseling around safer drug use and safer sex practices. Many, indeed, are morally or ethically opposed to teaching their patients or clients about safer drug use practices because they believe that the only appropriate goal is successful rehabilitation. If, however, one could preserve the health and lives of one's patients or clients by providing them with legal access to personal injection equipment, I believe it would become one's legal and ethical professional duty to provide that access or to refer the client to someone else who would.

Since we have 11 states that forbid illicit needle and syringe possession and 39 that allow it, one would think it would have been possible to evaluate the consequences of the two settings. Such studies seem not to have been done. Detailed studies of programs in other countries have not yet been completed; major cultural differences, however, may make these studies hard to interpret.

It would, of course, be possible to institute a limited program of legalized prescription of needles and syringes, as a research project (for two years, for example) through certain identified health-care providers or public health programs, for a limited number of addicts in several carefully chosen cultural settings, with close monitoring of health, of epidemiological consequences, of sharing, cleansing, or other behaviors, of unplanned good or bad consequences, and of public tolerance. Carefully planned evaluation would allow us, for example, to detect whether we had enhanced safer drug use and safer sex behavior, whether we had helped people enter into or remain in rehabilitation programs, and whether we had reached previously unreachable, highly alienated addicts.

Both kinds of programs—either legalization of prescription and possession of injection equipment for addicts or circumscribed research studies—are currently seen by many health care providers, law enforcement officials, and other public opinion leaders as contrary to good policy. Some suggest that all of our energy and resources should go instead into rehabilitation programs. Others suggest that promoting safer drug-use practices would actually risk health and lives from other drug-related disasters. And some extremists believe that infection and death are just and appropriate outcomes for those whom they see as guilty of particularly serious moral transgressions.

We need to move swiftly to develop clear evidence of how best to protect the public good—how to stop the epidemic while preserving the health, lives, and the individual rights of our fellow citizens, and how to help people out of addiction and back into the mainstream of life. Then we will have to develop the will to support those rational and effective programs.

Author's Note: My experience has been that almost everyone has strongly developed views about those who use illicit drugs, about social aspects of the AIDS epidemic, and about appropriate policy concerning the convergence of these two realms. I would greatly appreciate hearing from readers, for my own enlightenment and for the Mayor's Task Force on AIDS, in helping to develop policy in our state and in New Haven. In many ways, New Haven may represent a manageable microcosm for the development of effective health promotion policy. Equivalent problems will almost surely arise in every American city. Please share your views, either with me or with *Connecticut Medicine*.

Alvin Novick, M.D.

Professor, Department of Biology,
Yale University; Chairman,
Mayor's Task Force on AIDS, New Haven

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Executive Director's Letter to the President of Aetna

Mr. Timothy B. Norbeck, Executive Director of the Connecticut State Medical Society, wrote this letter to Ronald E. Compton, President of Aetna Life and Casualty Corporation. Because of the publicity given recently to the results of an Aetna survey of patient attitudes towards physicians, I believe that the readers of Connecticut Medicine *would find this letter of great interest.*

—Editor

Dear Mr. Compton:

I am writing to you to express concern and disappointment over the recently publicized "Health Care Fraud Survey: Results of a Nationwide Survey of Consumers," which had been conducted for Aetna Life Insurance Company. It was reported in your Survey and in the Hartford *Courant* that 46.3% of the responses indicated that "Many health care practitioners are more concerned with the potential for financial gain than with quality health care."

That high number is rather disturbing, but not at all surprising, considering the manner in which the question (No. 11) was worded. It was phrased in a very leading way and reads as follows: "There is concern about the quality of health care available to consumers today. Health care practitioners may be more highly motivated by profit than quality of care. Which of the following statements comes closest to describing your opinion on this topic?" The consumer is given three responses from which to choose: "Most are more concerned with the potential for financial gain ..." or "Many are more concerned ..." or "Few are more concerned ..."

Inasmuch as your question had already stated: "Health care practitioners may be more highly motivated by profit than quality of care," the consumer was programmed to make a negative response. That blatant suggestion offering a choice of two negative (of the three) responses can't help but elicit a sizeable number who would be critical of the medical profession—the 46.3%.

I noted from your question No. 9 ("Medical costs and insurance premiums have risen over the past several years. In your opinion, what are the major reasons for such increases?") that 53.4% of the responders indicated their belief that it was due to "Insurance companies seeking to increase their profit." Now that is a pretty negative response, but imagine how much worse it would have been if your question had also pointed out that insurance companies "may be more highly motivated by profit" than by offering a quality product to their policyholders? I'll bet the response to that leading question would have hit 75%!

To recapitulate, I believe that your survey—well-intended as it might have been—was a real disservice to the medical profession and to the public. Let us be fair in allowing consumers to answer questions honestly, without leading them to give answers that someone else may prefer to hear.

Apart from the survey's deficiency resulting from questionable phrasing, its interpretation for the press by an Aetna spokesman compounds the unfairness. Most patients whose physicians may waive copayments would not consider their doctors to have defrauded anyone except possibly the physicians themselves. *None* of the questions informed the survey participants that the waiving of copayments is considered as fraud by insurance companies. Yet more than half of the so-called "fraud" reported in the study was of this type. Most of what remains depends upon a patient's uninformed judgment concerning the clinical necessity of previous lab testing. What "fraud" is left is a far cry from the sensational "nearly 40%" touted in the press.

Not knowing any better, over 60% of the survey participants freely admitted that they would be likely to switch health care practitioners if they could find one who did accept insurance reimbursement as payment in full. Perhaps it's *patients* that Aetna should worry about more than doctors. For its indemnity clients, Aetna is in a contractual relationship with the patient, not the doctor. What if Aetna were to bill the patient for a partial refund of benefit payments when a doctor does not or cannot collect the co-payment or unreimbursed balance? After doing that a few times, Aetna would be unlikely to keep its present clients, or to sell much more health insurance to others, once the word got out.

We must all do what we can collectively to moderate the increases in health care costs, particularly those due to fraud, whether it be on the part of the provider, the patient, or the insurance community. The problem is likely to be alleviated not by dumping blame, but by promoting honesty in marketing insurance coverage, integrity in providing and billing appropriate care, and prudence in avoiding unhealthy habits and lifestyles.

Sincerely,

Timothy B. Norbeck

Executive Director
Connecticut State Medical Society

The President's Page

RBRVS: In Whose Ballpark?

Dr. Hsiao *et al* have now had their completed study, "A National Study of Resource-Based Relative Value Scale (RBRVS) for Physician Services," available for over a month. The 2,000-page report already is inspiring volumes of commentary. My Jewish heritage makes me conjure up the many learned tracts developed over centuries to interpret the Torah. Many more volumes will be written recommending, supporting, modifying, or rejecting this plan for future Medicare reimbursement to physicians. I can foresee that process taking on a life of its own and maybe becoming the most divisive issue organized medicine has had to face up to the present time.

Getting excited at this early stage would only serve to polarize physicians into camps from which it might be difficult for them to come together again. In a social science study such as this, the many variables are incompletely controlled. The recent AMA study on "The Impact of Medicare Payment Schedule Alternatives on Physicians" clearly points this out.

A number of reviews must still be carried out by the Physician's Payment Review Commission (PPRC), the Health Care Financing Administration (HCFA), and by Congress before a decision is made by Medicare regarding physician payment policy. The AMA will provide input to these deliberations, and I have asked our Connecticut AMA delegation to monitor this early phase, reporting to the Council after the upcoming AMA meeting in Dallas. Our AMA delegates and alternates include an ophthalmologist, internists, an obstetrician, general surgeons, and family practitioners, among others. I feel confident that they will represent us well.

From my viewpoint, it is much too early to draw up battle lines, and I hope war will be avoided. I plan to propose that a committee with broad representation by specialty be appointed to evaluate the progress when there is some, and then to return input to the AMA through our CSMS Council and House of Delegates when appropriate.

I can see the possibility of an entirely different mechanism or a significantly modified RBRVS evolving as the bureaucracy struggles to control intensity and volume of services as well as to "flatten the playing surface" of fees. Dr. William Roper, head of HCFA, has repeatedly stated he favors a capitation payment program for HMOs and other private health plans to reform Medicare payments. Such political realities will probably have a greater impact than the mass media effects of the Hsiao Report release.

I reiterate my call for patience and reasoned input at every level. And I promise another "President's Page" report on this subject in *Connecticut Medicine* within the next six months.

Norman A. Zlotsky, M.D.
President

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Reflections on Medicine

Gentle and Kind

ROBERT U. MASSEY, M.D.

All political pundits, amateur or otherwise, must have their own explanations of how George Bush came from behind to win last month's presidential election. My hunch is that some of that win must be ascribed to his surprising statement about wanting to build a "gentler and kinder America."

I do not recall any politician ever using words quite like that; I want to believe that he was sincere, even though he himself may not have thought up the phrase. It seems to fit with his personality, and at least he saw fit to use it, intending to imply something important; he used it over and over. It is unusual for a head of state to speak of gentleness and kindness, especially as official policy. Once, years ago, in a talk with the faculty at about this time of year, I quoted the poet Heinrich Heine:

> The New Year is at our door. I wish for the stupid a little understanding and for the understanding a little poetry. I wish a heart for the rich and a little bread for the poor. But above all I wish that during the days ahead we may blackguard each other as little as possible.

In recent years our liberals have become strident and shrill, puritanical in their insistence that they hold a monopoly on virtue and truth; our conservatives, on the other hand, have identified themselves too much with the interests of the rich and powerful, and, without the wit to know it, have resurrected a kind of social Darwinism. It was all bound to happen. When the Stuart monarchy drew too far away from English roots and decided that its rights were divine, the Puritans became shrill and nasty, and when they in turn grew mean and destructive enough, the English were eager to have their king back, if only he would behave.

Maybe we have grown weary of the meanness and silliness on both sides, and are now prepared to be gentle and kind, rediscovering our civility. In our profession, too, we could do with less righteous anger toward our real and imaginary enemies and more willingness to work for compromise and understanding with both the public and our political representatives. It may mean driving the money changers out of the temple, but that historically was a short-lived burst of wrath, and could be again. For medicine to be gentler and kinder, it will require converting our business managers into facilitators, and finding employment elsewhere for those who are incorrigible and cannot find legitimacy in any goal other than profit.

It will mean making peace and common cause with the other essential health profession, nursing; here also the shrillness on one side and the discourtesy and indifference on the other need to be set aside, along with all nonsense about one being quite able to do without the other.

We have too much to learn from lawyers and they from us to continue blackguarding one another; our professions see reality differently, through two quite separate knotholes. There is, however, common ground, both in our professionalism and in our roots in a rational view of the world. Here and there are promising signs that our unseemly conflict may find some resolution.

In the upcoming discussions of the relative value scale civility may be saved only by strenuous effort. In September *Connecticut Medicine* reprinted some remarks by Eli Ginzberg on this matter:

> The profession may suffer losses even if it holds ranks, but it runs greater risks if the American people are treated to ringside seats at a bruising battle between those who seek to protect their fees and those who relentlessly seek increases.

The Russian physicist, Andrei Sakharov, when he arrived in America, said that what he most admired us for was our democracy, our willingness to be self-critical, our work habits, and our generosity. It is that last quality that visitors often claim to see in us; it is no surprise to observe that generosity, gentle, and kind all derive from the same Indo-European root, *gen,* to know or beget. It has to do with human kind, our kinship, our common humanity, and our knowledge of one another.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington, CT.

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Letters to the Editor

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CARDIAC SURGERY IN THE ELDERLY

To the Editor: The report by Houser and associates on cardiac operations in octogenarians in the October issue of *Connecticut Medicine*[1] adds to the climate of support for the use of these procedures, when indicated, without undue regard to chronologic age. Over a decade ago, the safety of aortic valve replacement in septuagenarians was recognized,[2] and closed catheter aortic valvuloplasty will not eliminate the need for this operation.[3] Both Houser's group and that of Naunheim[4] have shown good results with still-older patients, and one can envision a time when even a centenarian might be considered a suitable operative candidate, as they already can be for cholecystectomy or mastectomy.[5] The need for surgical solutions to symptomatic ischemic and valvular heart disease will grow rapidly along with the total pool of aged persons, the large number who are mentally vigorous and systemically healthy, and the critical subset for whom cardiac symptoms are the principal detriment to quality of life, and who have surgically amenable causes. Every primary-care physician who sees adults, and every geriatrician, will encounter such patients. It is vital that the profession recognize the advance in cardiac gerosurgery, lest patients be denied a significant therapeutic modality based on a blanket sense, rather than on analysis of the evolving experience and the particulars of an individual case.

The hazard of emergency cardiac operations in this series is not clear, because the denominator (ie, total number of emergency cardiac operations) is not specified. If it is only the five cases cited in the analysis of deaths, the mortality is 100% and restrictions are justified pending improvements in medical and surgical management. If there were many more, the results may call for further analysis, since the alternative, conservative management, is surely bleak. Inclusion of these data would help practitioners make the best possible clinical decisions with the present state of the art. Meantime, perhaps the best conclusion to draw is not that emergent procedures should be withheld in these patients, but that elective operations are associated with best results and therefore are most clearly justified.

Henry Schneiderman, M.D.,
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HEALING, NOT JAILING: DEALING WITH ADDICTION

To the Editor: I welcomed Dr. Novick's editorial regarding substance abuse and hope that it will begin a dialogue to raise our collective consciousness regarding the illness of addiction so pervasive in our society. Actually I am optimistic that the recent focus on the molecular biology of neuronal receptors and neurotransmitters may solve the problem of craving and compulsion in the future.

I enclose a commentary which may stimulate further discussion.

Addiction is a disease. Addicts suffer from this disease. We treat sick people compassionately with appropriate medical care.

Or do we? In 1914 with the advent of the Harrison Act, the unfortunates addicted to "illegal" drugs began their prolonged separation from the rest of society. That isolation continues today. The overwhelming compulsion to use drugs, brought about by the physiological effects of these substances on the brain cell membrane receptors and neurotransmitters, causes drug-seeking behavior. Since drug acquisition, with the irrational exception of alcohol, tobacco, and prescription drugs, is illegal, the addict's efforts to obtain and use these substances are against the law. Yet this insatiable craving is merely one of the symptoms of an illness.

Our society continues to view the addict as lacking the will to stop drug use, thereby supporting the generally held opinion that these people are weak, callow and unworthy of our love, our respect, and our support. The addict is the pawn in a tug of war between the drug dealers who have a ready made market for their wares and law-enforcement agencies whose mandate is to prevent drug acquisition. This battle has to be won by the suppliers because, by its very nature, addiction requires, demands, must have at any cost, the stuff to satisfy the craving and compulsion. Any and all extremes of behavior, including robbery, assault, murder, prostitution, and drug dealing are justifiable to the addict who can't make it without a fix. Threats of arrest, incarceration, even the death penalty won't alter the pathophysiology of damaged neurons resulting in uncontrollable craving.

What is the answer to all this? Simply stated, SOCIETY MUST CHANGE ITS ATTITUDE TOWARDS DRUGS. We must view psychoactive drugs, as damaging as they are, with pragmatism. Logical thought must replace the anger and revulsion so commonly felt when problems relating to drugs are considered. We must acknowledge the fact that addiction is a disease like any other. We must provide ongoing factual educational programs for the general public so that an informed choice as to whether or not to use drugs can be made. We must provide adequate treatment to include ready access to methadone for opiate addicts and it must be subsidized for those without funds. In addition, oral methadone and clean needles and syringes must be made available to slow the spread of the AIDS virus, another deadly facet of the drug problem. In short, we must decriminalize this disease so that the helpless addict no longer suffers the indignity of being arrested, jailed, and labeled less than human because of an illness beyond his or her control. As a major public health problem, the disease of addiction should not be a concern of the criminal justice system.

Henry N. Blansfield, M.D.

Danbury, CT

AROUND THE STATE

St. Raphael's Dedicates Celentano Building

Dr. Luca E. Celentano, *doyen* of the New Haven medical community and, at 88, leading contender for the title of Connecticut's senior practicing physician, was honored in October by the Hospital of Saint Raphael both as a physician there since 1932 and as a major benefactor in its building program. A new five-story patient care building has been named in Dr. Celentano's honor and is part of the hospital's $33 million modernization and expansion project on the block where Dr. Celentano, as a boy, delivered groceries. The new buildings nearly complete the hospital's total renewal, begun in 1976. Long active in medical society affairs and as a member of CSMS committees, Dr. Celentano was president of the New Haven County Medical Association in 1966.

CSMS Chairman Appointed to National CME Position

Marvin Garrel, M.D., Chairman of the CSMS Committee on Continuing Medical Education, has been appointed a member of the Committee on Review and Recognition of the national Accreditation Council on Continuing Medical Education (ACCME) for a three year term. This seven-member committee acts on the continuing recognition of state medical societies as agencies of accreditation for intrastate sponsors of CME. CSMS was so recognized in 1985 for a four year term.

Dr. Garrell, who is in the private practice of internal medicine in Fairfield, is an Associate Clinical Professor of Medicine of Yale University School of Medicine. He also serves as Director of Medical Education of Saint Vincent's Medical Center in Bridgeport, and Medical Director of the Jewish Home for the Elderly of Fairfield County in Fairfield.

New CEO at St. Francis Hospital and Medical Center

David D'Eramo, PhD, president and chief executive officer at St. Vincent Charity Hospital & Health Center, Cleveland, will succeed **Sister Francis Marie Garvey, CSJ,** as president and CEO at St. Francis Hospital & Medical Center. Sister Francis Marie plans to retire this year after 15 years at the helm at St. Francis.

Hartford Hospital Marks Transplant Milestone

Hartford Hospital surgeons **Hiroyoshi Takata, M.D.,** and **Henry B.C. Low, M.D.,** last month completed the 50th heart transplant to be performed at the hospital's transplant center since the program began four years ago. Chief of surgery **Peter J. Deckers** said that, with more than 600 kidney transplants and 22 liver transplants completed there since the 1970's, Hartford Hospital's transplant center is the busiest in New England.

Since the heart transplant program's November 1984 inception, 44 of the 50 patients—or 84 percent—have survived. Decker said the transplant program is preparing to expand to include lung and pancreas transplants in 1989.

Community Physicians Honored for Contributions to Clinical Research

The Yale Comprehensive Cancer Center presented its Annual Clinical Research Award to **Dr. James E. Brown** and to **Dr. Salvatore Del Prete** during the quarterly meeting of the Connecticut Oncology Association.

The award was established in 1987 to recognize community-based cancer specialists who contribute to clinical oncology research at the Yale Cancer Center. Drs. Brown and Del Prete were cited for their diligence in referring patients for clinical research studies, as well as for their involvement in developing and reviewing research protocols and for stimulating interest and participation in the Cancer Center's research efforts.

Dr. Del Prete, who received this award for the second time, practices in Stamford. Dr. Brown has his practice in Middletown.

Helen L. Smits, M.D., director of John Dempsey Hospital, has been appointed to the 22-member governing board of the Joint Commission on Accreditation of Health Care Organizations. The commission accredits nearly 8,300 organizations nationwide, including 84% of the general hospitals. It also accredits nursing homes, psychiatric hospitals, substance abuse programs, group practices, community health centers and hospices, among others.

BOOK REVIEW

Doctors: The Biography of Medicine

By Sherwin B. Nuland, M.D., New York, Alfred A. Knopf, 1988. xxi + 519 pp., $24.95

It is almost impossible for me to pass a bookstore or to pass up reading a book review; I keep looking for one of those books that, once started, I would put down reluctantly, lose sleep over, find excuses to miss committee meetings in order to get home to, read slowly so as not to finish too soon, or cunningly hide in my suitcase so that it will be there as a pleasant surprise when I pack for my next two-hour plane trip. Since my first Jules Verne novel fifty-five years ago I can name almost every one of those discovered books; some I have read two or three times with no feelings of guilt.

Two early books about medicine belong to that very personal library: Logan Clendening's *The Human Body*, and Paul de Kruif's *Microbe Hunters.* The most recent addition is Sherwin Nuland's *Doctors.*

I cannot claim complete objectivity for this review. He and I discussed the book while he was writing it; I even read the Halsted section in manuscript, not to play the critic—he had enough of those— but because I was preparing a talk on Halsted for some of our surgical residents and Dr. Nuland kindly lent it to me. I knew he was planning the book along the lines of Sigerist's *Great Doctors (Grosse Aerzte),* but more than Sigerist, he was writing a biography of medicine, which indeed is the book's subtitle.

A definition of history is far from simple; it is the past itself, it is the story of the past, the study of the past, the artifacts left over from the past, but most of all it has to be the human beings of the past, the great and the small, the famous, the infamous, and the obscure, alone and in societies. It is, in short, what we make it, corrected always by whatever incomplete evidence that has been left behind. We seek, but probably always fall short, to tell it, in von Ranke's much quoted words, "...as it really was" *(...wie es eigentlich gewesen.).*

Dr. Nuland has written his story of medicine as biography, the biographies of his personal heroes, beginning with Hippocrates and ending with Helen Taussig as the penultimate chapter. Only the final chapter is about a development in surgery, transplantation, but it too is about the contributors to that technology. *Doctors* is, in a sense, as all biographies are, the author's own inner story; the books we read, the past we see, and the heroes we honor tell others as truthfully about ourselves as any honest autobiography. "The story of medicine," he writes in the introduction, "is therefore the story of my professional life."

He has left out some of my heroes, such as Browne, Sydenham, Louis, Koch, Pasteur, Osler, and Billings, but he has told some stories of his heroes in ways that I had not heard before. This is a personal book, honestly and enthusiastically written, and therefore remarkably appealing; it is not easy to put it down, and it serves especially well for bedside reading. Each biography is about 30 to 40 pages long, about right for two or three-30-minute Oslerian sessions— you'll recall, he recommended "Before going to sleep read for half an hour.... You will be surprised to find how much can be accomplished in the course of a year." Dr. Nuland says he is "a voyeur, and a gossip to boot," but there is little revealed of the darker side of his heroes. He suggests some nastiness here and there, enough to make them almost human, not enough to disturb our rest; he is, in print at least, a proper twentieth-century Victorian.

Dr. Nuland's intent was clearly not to produce a scholarly contribution to medical biography, all encumbered with the apparatus of half pages of footnotes in 6-point type with Greek quotations; he did not intend to present these lives rewritten completely in the light of newly discovered data or new-found psychological or sociological insights; his sources are all listed in the bibliography; they are neither footnotes or endnotes, and are not cited in the text. I confess, I sometimes found myself wishing I knew just where to find this or that quotation. But I knew I could if I took the pains to follow up on the chapter bibliography, and, anyway this is a personal selection and is intended to be read as one man's point of view about the rise of the complementary art and science of medicine, a point of view illustrated by the lives of those who have especially interested and inspired him. An internist or psychiatrist might have chosen a different crowd, but these men, and woman, are no strangers to any of us.

For those of us working in medicine's vineyard it is good to indulge in a season of hero-worship now and then, and to read how our profession seems to refute the claim of those who say there is no progress, only change, in human affairs. Incidently, even Plato came out against the cyclical view of history and admitted progress in medicine: "the old practitioners cut a poor figure in comparison with today's." Also, for our students, who are assaulted on every side with those eager to tell them about the faults of modern medicine, its commercialism and inhumanity, its uncritical devotion to technology, perhaps even its complete irrelevance to health, a better acquaintance with Harvey or Parē, with Semmelweis or Taussig is restorative, and would reassure them that they had not, in fact, made a bad choice.

Those of us who teach medical history have been looking for a book to hook students with; this one will more than do. I know, I've tried it, and it will go far to convince their parents, too, as if they needed persuading, that they should be proud of their sons and daughters in medical school and of what they are setting out to do and to be.

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CSMS SEMI-ANNUAL MEETING HIGHLIGHTS

Norman A. Zlotsky, M.D. honors Sultan N. Ahamed, M.D., Norwich, for his service as NLCMA Associate Councillor (1983-1988).

The President thanks Annemarie S. Welch, M.D. for her service as CSMS Secretary (1986-1988).

Kenneth M. Robbins, M.D., Middletown, Speaker of the House of Delegates, flanked by Sultan N. Ahamed, M.D., Vice-Speaker, and Timothy B. Norbeck, Executive Director.

Robert P. Ragusa, M.D., Stratford, congratulated for his years as FCMA Associate Councillor (1981-1985) and Councillor (1985-1988).

Turpin H. Rose, M.D., Danbury, addresses the House. Waiting his turn is Andrew C. Wormser, M.D., New Haven.

President Zlotsky honors Mehdi S. Eslami, M.D., Waterbury, for his service as Vice-Speaker (1984-1988).

From the Executive Director's Office

COUNCIL MEETING

Wednesday, October 19, 1988

Attendance

Present in addition to the Chairman Dr. Guy W. Van Syckle and Vice Chairman Dr. Joseph C. Czarsty were Drs. Abbot, Ahamed, Blum, Bobruff, Bonner, Chmieleski, Freedman, Hollister, Jr., Kaufmann, McDonnell, Orphanos, Petrie, Reyelt, Jr., Robbins, Rose, Sadowski, Schwartz, Sosa, Upham, Villa, Welch, Zanker, Zeppieri and Zlotsky.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Sullivan, Mr. Staples, Mr. Tomat (FCMA), Mr. Coffey (HCMA), Mr. Freberg (NHCMA) and Mrs. Reed (President, Auxiliary).

Absent were: Drs. Beck, Dardick, Eslami, Fox, Ill, Kamens, O'Brien, Rubin, Wetstone and Whalen, Jr.

Frederick C. Weber, Jr., M.D.

A moment of silence was held for Frederick C. Weber, Jr., M.D., who died on 15 September 1988. Dr. Weber served as President of CSMS in 1971-72 and in various other capacities during his 46 years of membership. A note of sympathy will be sent to his widow.

Report of the President

Dr. Zlotsky reported on the following items:

Pension Program— Since the last Council meeting legal counsel was directed to prepare a check list of all necessary steps that had to be taken to insure that the pension plan was in conformance with regulations. A meeting of the Pension Administrative Agency was held with members of the CSMS Staff and the Pension Actuary, Mr. Richard Brandt. The document from legal counsel was reviewed line by line and it was determined that all of the necessary reports had been filed and the plan was up to date and functioning properly. The necessary changes that have to be made, due to the 1986 Tax Reform Act, are already being formulated by the Pension Actuary and he reviewed some of the changes with the PAA. Eventually, changes will be made in consultation with legal counsel and the PAA was assured that they will be filed properly and on time. It is expected that the PAA will meet twice a year, and report to the Council, as requested, prior to each annual meeting of the House of Delegates. The Pension Administrative Agency concludes that the Pension Plan is currently meeting all the necessary requirements and that no further audit is necessary.

CMMI/CMIC—At the last Council Meeting it was voted that the leadership of CMMI, CMIC and CSMS meet to discuss the relationship between the organizations now that the employees and equipment were transferred to CMIC. It was reported that Dr. Dowling, President of CMIC, has called a meeting on 7 November to discuss organizational relationships between the CSMS, CMMI and CMIC. In informal discussion, Dr. Dowling, indicated that a change in the CMIC bylaws that would make available definite seats on the CMIC board for CMMI directors would appear to be feasible. This subject will be discussed at the meeting and a report will be made to the Council at its next meeting.

Commission on Hospitals and Health Care—In response to a communication that a physician be named to fill a vacancy on the Commission, a reply was received from the Governor that the request would be taken into consideration. It was suggested that a copy of the communication to the Governor be sent to Majority Leader Irving Stolberg for his information.

County Meetings—Dr. Zlotsky reported that during his visits to the semi-annual meetings of the county associations, a great deal of interest was expressed in Resource Based Relative Value Scale (RBRVS). The counties were informed that RBRVS will be discussed at the AMA December meeting and that the CSMS delegation will obtain all the information possible on the subject. Dr. Van Syckle pointed out that *JAMA* is devoting an entire issue on RBRVS Methods and Results in late October.

President's Dinner—A President's dinner is scheduled for November 9 to which the Presidents and Executive Directors of the county associations and the Chairmen of the CSMS Sections have been invited. One of the main aims of this meeting is to get the sections more involved in legislative activities and perhaps develop some resource groups to write position papers and appear before the General Assembly on issues that come up pertinent to medicine.

Report of the Executive Director

Tim Norbeck reported on the following items:

Mr. Norbeck reported having participated over the weekend in a panel discussion on Universal Health Care. The new Massachusetts plan has been estimated by state officials to eventually carry a price tag of $622 million. However, others claim the cost would be in the area of $2 billion. It's funding mechanism of a 12% surcharge to employers on the first $14,000 of an employees income appears to be regressive, and the state's taxpayers are left responsible for supplying any revenue shortfalls. Governor Dukakis has slashed initial funding of the program from $8.5 million to $1 million, because of budget problems in the state.

The AMA has announced a plan to help the underinsured and uninsured population by expanding Medicaid to cover the 27 million people who live chronically or seasonally below the poverty level. The plan would also support "risk pools" in the states, such as Connecticut's risk pool, for uninsured hospital expense. Finally, the AMA plan would support substantial change in the tax laws to provide a 100% tax deduction for self-employed persons and their employees, such as is already enjoyed by companies that provide health insurance to their employees. This deduction, costing only $4 billion in lost taxes, would rectify the situation for another 6.3 million uninsured people, and equitably put small businesses and their employees on a par with larger companies.

Mr. Norbeck alerted the Councilors to follow the outcome on election night of two ballot initiatives; one called "Med Assist" proposed to help Missouri's ailing Medicaid program, and the other called "Propostion 99," increasing the California tobacco tax from 10 cents to 35 cents. Our Connecticut tax on a pack of cigarettes is 26 cents.

Report of Auxiliary President

Mrs. Reed reported that the auxiliary had their semiannual meeting on 17 October in Cromwell and that Mary Strauss, President of the National Auxiliary was the speaker. She also distributed a copy of the program entitled "A Symposium on the Troubled Adolescent" which is being presented by the CSMS Auxiliary on Thursday, 3 November 1988 at the Ramada Inn, Meriden. Council members were requested to invite any parents of troubled adolescents, that they were aware of, to attend the symposium. It was VOTED to commend the Auxiliary for their efforts in presenting this program.

Report on CMMI/CMIC Activities

Dr. Orphanos reported that the new policy year starts on 1 January 1989 and that rates are going up an average of 8%; 4% is due to the Income Tax Reform Act of 1986 and 4% is due to inflation. CMIC is seeking congressional help to try to reduce the effect of taxes, but it appears that there will be no technical correction in this session. As of October 1, 1988 the reserves of the company were 90 million dollars. During the past several months a $600,000 credit was given to the organization when it was learned that some obscurely passed law exempted the organization from guaranteeing the losses of other Connecticut liability insurers. The law that was passed makes CMIC only responsible for medical liability company losses, thereby saving that amount of money. Reinsurance negotiations took place in London and were fruitful. The London reinsurers were made aware of the change in employee status. They expressed concern that this situation would not occur again. Dr. Orphanos reiterated that CMIC reserves are to pay out awards and that the officers of CMIC have fiduciary responsibility to their policyholders and not to the CSMS Finance Committee. It was reported that CMIC was concerned that they have not been consulted about tort reform and have arranged for a meeting with the CSMS lobbyists to try to have some concerted action on next year's tort reform. It was VOTED to accept the report as information and with commendation.

M.D. Health Plan

Dr. Van Syckle reported that the main issue at this time is the new stock offering. It is expected that SEC approval to offer the stock for sale should be forthcoming shortly. Subscribers in the plan number approximately 7,200 and if the present trend continues, by January 1, the number will be 10,000. He also reported that a proposal is planned for participating physicians which will allow them to provide M.D. Health Plan medical benefit coverage to themselves and their employees at significant savings. Offering the plan to groups of 24 and under has been very successful. They now represent approximately 25% of the enrollment. This is a partial answer to the problem of many uninsureds who cannot otherwise obtain medical insurance. Also health questionnaires are allowed in these groups permitting appropriate health assessments and premium levels. Small groups are underinsured in Connecticut as well as nationally.

Committee on Public Health

It was VOTED to approve the recommendation of the Committee on Public Health that the Chairman of the CSMS Committee be authorized to work with the State Commissioner of Health Services to support public health, preventive medicine, and occupational medicine programs at the UConn School of Medicine, and to offer the services of the committee in instituting programs to support training for health officers, medical consultants, and medical directors in preventive medicine, communicable diseases, occupational medicine and public health.

Report on AMA Young Physicians' Section Meeting

Dr. David Reed, Stamford, CSMS delegate to the AMA Young Physicians' Section Meeting, submitted a report on his attendance at the 1988 meeting. Two resolutions were submitted by the CSMS/YPS. One resolution addressed the possibility of establishing state risk pools to provide liability coverage for physicians caring for indigent patients and the other addressed the problems of tail coverage in claims-made liability insurance and its impact on the ability of physicians to change practice modes or locations. Both these issues were referred for further evaluations. It was VOTED to accept the report as information and that the report be circulated to physicians who meet the age requirement for this section, drawing their attention to the section and encouraging them to become active members.

Report of AMA Resident Physician Section

(a) Dr. Rockford G. Yapp, Chairman of the CSMS/RPS, submitted a report on his attendance at the AMA meeting in which he reported that the two areas that received the most discussion were the Harvard study on Resource Based Value Scale and Mandatory Health Insurance for Workers. It was VOTED to receive the report as information. (AMB "C" 10/19/88)

(b) In response to the request of the CSMS President that the CSMS/RPS assist in developing a position paper on the residency programs in the State of Connecticut the RPS section met on October 4, 1988 and voted unanimously to recommend to the Council the adoption of Report M of the AMA/RPS with the exception of item #8. It was felt that these principles are consistent with the AMA policy and would provide a firm foundation for CSMS policy in discussion on work hours and supervision of resident physicians. It was VOTED to receive the report as information. Because the Council did not receive this report in advance of the meeting, thereby not having the opportunity to study the recommendations made, at the suggestion of the President, the report will be placed on the agenda for consideration at the next meeting of the Council.

Life Members

It was VOTED to receive as information the following list of Life Members effective January 1, 1989:

Gilles G. Allard, Salem, Mass.	(F)
William H. Burke, Bridgeport	(F)
Eugene C. Citrano, Trumbull	(F)
Charles A. Crown, New Canaan	(F)
Frank DiCorato, Norwalk	(F)
Jack J. Falsone, Norwalk	(F)
Henry Frenkel, Bridgeport	(F)
Robert E. Gaffney, Fairfield	(F)
Alvin Goldman, Danbury	(F)
Bertram Grossman, Norwalk	(F)
Geraldine R. Huss, New Jersey	(F)
Robert C. Joy, Danbury	(F)
Edward A. Kamens, Fairfield	(F)
Stewart A. King, Darien	(F)
Leo Levieff, Stratford	(F)
Robert A. Nevins, Fairfield	(F)
John C. Olsavsky, Bridgeport	(F)
David Peterson, New London	(NL)
Walter Richar, Stamford	(F)
Gilbert J. Rose, Rowayton	(F)
Robert Schwimmer, Greenwich	(F)
Emily Upton, Danbury	(F)
Charles Winterhalter, Milford	(F)

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on October 19, 1988. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

SUMMARY OF PROCEEDINGS
CSMS HOUSE OF DELEGATES—SEMI-ANNUAL MEETING

Ramada Inn, North Haven—November 17, 1988

Reports and Resolutions

The House of Delegates received reports from the President, the Council, the AMA delegation, the Executive Director, Connecticut Medical Political Action Committee (COMPAC), Connecticut Medical Management, Inc., (CMMI) and from M.D. Health Plan. Recommendations and resolutions were also received from the Council, county associations, and individual delegates.

Principal Actions Taken

(a) **Report of the President,** Norman Z. Zlotsky, M.D., Rockville: The House voted to accept the report of the President, which included a report on legislation transferring the courtesy card program to the Department on Aging, the issues affecting the practice of medicine that are expected to come before the Connecticut General Assembly in 1989, the need for physician organization in the legislative arena, the relationship of CMIC and CMMI, the subject of AIDS, the DRG activity, and the Resource Based Relative Value Scale (RBRVS). The full text of his report is published in full at the conclusion of this summary.

(b) **Report of the Council,** Guy W. Van Syckle, M.D., Danbury: The House voted to accept the report of the Chairman of the Council, which reviewed the activities of the Council since the last meeting of the House of Delegates. Minutes of the interim Council meetings have already been published in *Connecticut Medicine.* Special emphasis was placed on the M.D. Health Plan, the 1989 Budget, CMMI/CMIC activities, and the report on the countersuit action that was supported by CSMS. The actions taken on the Council's recommendation appear elsewhere in this summary.

(c) **Report of the AMA Delegation,** Stewart J. Petrie, M.D., Derby: The House voted to accept the report of the AMA Delegation. The report contained the principal actions taken at the 1988 Annual Meeting of the AMA House of Delegates.

(d) Report of the Executive Director, Mr. Timothy B. Norbeck, New Haven: The House voted to accept the report of the Executive Director which included a discussion of recent Medical legislation concerning the Catastrophic Protection Act, a poll on quality of medical care undertaken by a Connecticut based insurance company, rising employee health care premiums, and the need for enlightening the public on these issues. The full report is published at the conclusion of this summary.

(e) Connecticut Medical Political Action Committee (COMPAC), Patrick J. Concannon, M.D., Chairman: Dr. Concannon reported that this has been another record breaking year for COMPAC and that more candidates were assisted and to a greater degree than ever before. However, he urged the CSMS members who have not joined COMPAC to share in this important function and send in their dues.

(f) Report of Connecticut Medical Management, Inc. (CMMI), James P. Orphanos, M.D., Chairman: The House voted to accept as information the subject report which gave an update at the various activities being carried out by CMMI and CMIC.

(g) M.D. Health Plan Update: William A. Whalen, M.D., Chairman of the Board, and Mr. Douglas Hayward, President and CEO, presented a detailed report on the current and proposed status of the Plan. The report included enrollment figures for both physicians and subscribers, the financial outlook, and the new stock offering.

(h) Budget for 1989: The House voted to approve the budget for 1989, as prepared and recommended by the Council, and that the dues remain at $300.00

(i) Bylaw Amendments: Two bylaw amendments were adopted as follows:

(a) Article V—House of Delegates—Section 11-QUORUM (Change in Capitals) A quorum, TO CALL TO ORDER, any meeting of the House of Delegates shall consist of a majority of the sum of the number of delegates eligible to vote in the House. ONCE THE MEETING HAS BEEN CALLED TO ORDER, A QUORUM SHALL CONSIST OF FIFTY PERCENT OF THE TOTAL DELEGATES REGISTERED.

(b) Hospital Medical Staff Section: Several amendments were made throughout the bylaws to establish a CSMS Hospital Medical Staff Section.

(j) Resolution on Restraints Placed on Physicians by Claims Made Professional Liability Carriers (Approved as follows:)

RESOLVED, That the CSMS Council investigate the possibility of having a reciprocal agreement among professional liability companies so that a physician may contemplate establishment of a medical practice in another state without the purchase of tail coverage, thus allowing physicians more mobility from one state to another; and further be it

RESOLVED, That the CSMS Council report on this subject to the House of Delegates at its Annual meeting in May 1989 and that the House of Delegates, at that time, transmit its action to the Connecticut Medical Insurance Company.

(k) Resolution on the Resource Based Relative Value Scale (RBRVS) (Approved as follows:)

RESOLVED, That this House of Delegates of the Connecticut State Medical Society instruct its AMA Delegation to support the concept of a unified approach by our Profession, led by AMA, in the upcoming consideration of the RBRVS on a national level.

AWARDS

CSMS Past Service Awards to Officers and County Councilors

OFFICERS

Annemarie S. Welch, M.D., New Britain	
Secretary	1986-1988
Lawrence B. Ahrens, M.D., Newington	
Speaker, House of Delegates	1983-1988
Mehdi S. Eslami, M.D., Waterbury	
Vice Speaker, House of Delegates	1984-1988

COUNCILORS

Fairfield County	
Robert P. Ragusa, M.D., Stratford	
Associate Councilor	1981-1985
Councilor	1985-1988
John J. Sullivan, M.D., Stamford	
Associate Councilor	1982-1988
Middlesex County	
Kenneth M. Robbins, M.D., Middletown	
Associate Councilor	1985-1988
New London	
Sultan N. Ahamed, M.D., Norwich	
Associate Councilor	1983-1988

Frederick C. Weber, Jr., M.D.

A moment of silence was held for Frederick C. Weber, Jr., M.D., who died on 15 September 1988. Dr. Weber served as President of CSMS in 1971-72 and in various other capacities during his 46 years of membership.

Report of the President Semi-Annual Meeting of the CSMS House of Delegates

NORMAN A. ZLOTSKY, M.D.

Since taking office on 4 May my impression has been that the medical revolution has escalated a notch or two. As you recall, that was the final day of the legislative session which voted in mandatory assignment on a tie vote at 11:59 P.M.. We subsequently held a well attended news conference at which I feel we made our opinions well known. There was then an orderly transfer to the Department on Aging of the responsibility for the Medical Courtesy Card program. Our concern now is what will happen in the next legislative session. I am certain that there will be attempts made to remove all income guidelines from the program.

This is only one of the many issues we face. Tort reform, direct access to patients for physical therapists, nurse prescriptive authority, podiatrists working on the ankle, AIDS, and waste disposal are some of the many issues we will be involved in when the Legislature convenes in January. We recently held a legislative forum as well as a Presidents' Meeting of both county and section presidents to address these problems early. The goal of these meetings was to develop physician involvement at the Capitol for which the need has never been greater. To that end, we are developing a cadre of interested physicians for each issue who will meet, develop a position, and be available to our legislative committee and lobbyists to testify at hearings, lobby legislators, and give us a presence in Hartford. Irving Stolberg, the House Speaker, spoke at the Tolland County Semi-Annual Meeting. In his talk, he very bluntly stated that no matter how excellent our lobbyists, legislators would listen to us much better if we physicians were seen and heard on legislative issues. As the leaders of the Connecticut State Medical Society, we need your input into this process. I have left sign-up sheets for the most significant issues in the back of the room. Pick your ax to grind and sign up. If you know of a physician with a specific interest, put him in touch with Joe Czarsty or me. All the lobbying talent we can muster will be utilized.

Beside the external issues, I have spent considerable time attempting to resolve the problem of what Connecticut Medical Management, Inc.'s role should be in the running of the Connecticut Medical Insurance Co. The problem arose because of Connecticut tax laws requiring that sales taxes be paid for subsidiary companies providing help and products for parent companies. Since CMMI owned CMIC's employees and equipment, CMIC would have to pay sales tax on these activities. CMMI and CSMS pension plans also would have had to be compatible, a situation not easily accomplished given the different types of employees in each. The more significant problem was the tax problem, and for this reason the CMMI board voted to turn the employees and equipment over to CMIC to avoid the tax exposure. This also solved the pension problem except that it was discovered that the Pension Administration Agency which is the administrator of the CSMS pension plan and which has fiduciary responsibility for the plan had not been meeting. To correct this we have subsequently had two meetings and are quite satisfied that the plan has been running well. We feel we have met our responsibilities and will continue to meet regularly and report to the Council and House of Delegates. After CMMI's action to turn over the employees, the Council, at the urging of several CMMI board members and the Council, requested a meeting between CSMS leaders and the CMMI board to clarify the ongoing relationship between CMMI and CMIC. When we held the meeting last week, there was unanimous support to continue the present ten year contract. Joe Czarsty and I representing CSMS were also assured of the best efforts of the board members to maintain the relationship, but no specific mechanism was spelled out. I expect a CMMI report will detail this information in time.

Other pressing issues have been DRGs, universal health care, and the Resource-based Relative Value Scale (RBRVS). I recently sat on a DRG panel with representatives of CHS, the Insurance Association, and the Commission on Hospitals and Health Care. It appears there will be much DRG activity in the upcoming legislative session and we should carefully monitor and respond if modification or repeal is in our interest. The Connecticut Business and Industry Association (CBIA) is looking for a 20% rollback and the Commission is granting a 20% increase in consideration of increased nurses' salaries, AIDS treatment, and other significantly increased costs. I believe that the Business Coalition on Health does recognize that cost control can be enhanced by good quality assurance and utilization review. We have to educate those with the purse strings that this is the best way of controlling costs or we may find that funds are lacking for a level of care we now recognize as the standard of care.

I also sat on a panel for universal health care with a Connecticut legislator, a CBIA spokesman, and a bureaucrat from the Massachusett's program. As a physician and patient advocate, I strongly support universal health care. To make it work, however, more innovative ways of funding the program for that 10% of the population must be found. Massachusetts has been unable to fund their program with a budget deficit. Connecticut is in the same belt-tightening situation at present. It will take Solomonic thinking or a much more solvent economy to solve this problem.

Finally, I would like to say a few words on the Resource-based Relative Value Scale. The almost 2,000 page Hsiao report was released with a lot of fanfare and with many commentary articles in *JAMA, NEJM*, and other sources. Many more articles will be written supporting, modifying, or rejecting this plan for Medicare reimbursement to physicians. I can foresee that process taking on a life of its own and becoming the most divisive issue organized medicine has had to face to the present time. Getting excited at this early stage will only serve to polarize physicians into camps from which it may be difficult to come together again. In a social science study such as this, the many variables are incompletely controlled. The recent AMA study, "The Impact of Medicare Payment Schedule Alternatives on Physicians," clearly points this out.

A number of reviews must still be carried out by the Physicians Payment Review Commission (PPRC), the Health Care Financing Administration (HCFA) and by Congress before a decision is made regarding physician payment policy by Medicare. The AMA will provide input to these deliberations and I have asked our AMA delegation to monitor this early phase and report to the Council after the upcoming AMA meeting in Chicago. Our AMA delegates and alternates include an ophthalmologist, an internist, an obstetrician, a general surgeon, and a family practitioner among others. I feel confident they will represent us well.

From my viewpoint, it is much too early to draw battlelines and I hope war will be avoided. I plan to have a committee that will be well represented by specialty to evaluate the progress when there is some and to return input to the AMA via the Council and House of Delegates when appropriate.

I can see the possibility of an entirely different mechanism or a significantly modified RBRVS evolving as the bureaucracy struggles to control intensity and volume of services as well as "flattening the playing surface" of fees as Dr. Hsiao described it. Dr. William Roper, head of HCFA, has repeatedly stated he favors a capitation payment program to HMO's and other private health plans to reform Medicare payments. Such political realities will probably have a greater impact than the effect of the mass media coverage of the Hsiao Report release. I reiterate my call for patience and reasoned input. I promise another President's Page report in the next six months. I believe that can be said for most of the issues I discussed today. Organized medicine needs your help to cope with the issues presented. Please sign up today at the back of the room and follow up with your input when called.

In reporting for the officers, I would be remiss if I did not report that I asked Dr. Roger Beck, your President-Elect, to represent us on the task force for nurse prescriptive authority. He has done a masterful job in this ongoing activity and I want to commend him.

Report of the Executive Director Semi-Annual Meeting of the House of Delegates

TIMOTHY B. NORBECK

Oh, how I would much prefer to stand before you and comment on how great things are going for the medical profession. But I can't do that, of course, because it just isn't so. There are some positive signs and I believe that the CSMS Council and this House of Delegates have been most responsive to the issues facing us in Connecticut, but the national picture is something else.

As physicians know so well, Washington has clearly forgotten—and did so may years ago—Thomas Jefferson's dictum, "Were we directed from Washington when to sow, and when to reap, we should soon want bread."

Just last month Citizen Action, a consumer advocacy group, charged that this nation's Medicare beneficiaries paid $2.7 billion in excess bills to physicians. They were talking about the amount of money not taken on assignment, but the charges received a great deal of publicity and were helped by the general confusion of the Medicare billing process. We responded by proudly pointing out that Connecticut physicians were accepting assignment on 79% of claims and had overwhelmingly supported a voluntary program that has become a model for numerous state and county medical societies throughout the country.

I guess we must resign ourselves to the accuracy of George Bernard Shaw's observation that a "government that robs Peter to pay Paul can always count on the support of Paul." Or as Henry Adams noted: "Practical politics consists in ignoring the facts," and that is just what is happening in Washington as legislators lay the blame for rising health care costs on physicians rather than to point out to their elderly constituents the real reasons such as an aging population, increased Medicare enrollees, and the problem which no one wants to address: expenses of the terminally ill.

Most of you are aware that the Aetna Insurance Company recently commissioned a survey on fraud—a survey which received national attention. It was noted in the findings that 46.3% of the respondents think that many doctors are more concerned with financial gain rather than quality health care. We secured a copy of that survey, and do you want to know how that question was asked? The question stated that "there is concern about the quality of health care available to consumers today. Health care practitioners may be more highly motivated by profit than quality of care. Which of the following statements comes closest to describing your opinion on this topic?" Then the respondent has the choice of "most are more concerned with the potential for financial gain ... (which received 9%) many are more concerned (which received 46.3%) and a few are more concerned ... (which received 42.0%). Talk about leading questions and answers. As you may have noted from the handout when you arrived, we sent a letter to the President of Aetna which would not be mistaken for a perfumed note of protest.

The Aetna survey question reminds me of a survey on national health insurance taken during the mid 1970s when the question asked "do you favor national health insurance—that is, free medical care for all?" and then much was made of the 73% who responded favorably. The way the question was phrased, I was surprised that it didn't elicit a 95% favorable response.

We have all heard the rumbling of insurance companies and businesses about rising health care costs and the cost of health insurance. I was on a panel just three weekends ago when a number of people made a great deal of a recent survey that shows that health care is the number one cost concern of members of the Connecticut Business and Industry Association. Some 77% of the companies reported a price hike of at least 11% in their health insurance costs and nearly 36% reported increases of more than 21%. Of extra significance to us is that liability insurance costs, which had been the number one concern in 1987, fell to number two.

Perhaps you saw last week's news from United Technologies Corporation where 50,000 salaried employees will soon be required to share the costs of their health benefits. A spokesman pointed out that their health-care costs had risen 40% in the past two years, from $233 million to $329 million, "levels which threaten the corporation's economic competitiveness."

Health care industry experts say that employee health insurance premiums will rise another 20% to 30% next year. General Motors spent $2.9 billion on medical care coverage for its 2.3 million employees in 1987. Their profit for last year was $3.6 billion. The trend nationally will soon be to shift those corporate health care costs to the employees, and the result will most assuredly be far greater concern by the working public over their new cost sharing burden and intensified criticism of the medical profession.

Add to this further complaints from the nation's elderly when they discover on 15 April 1990 that the Medicare Catastrophic Protection Act legislation passed earlier this summer wasn't really that big a deal and initially will only benefit those few who have prolonged stays at hospitals—and doesn't address long-term nursing home care. I say 15 April 1990 because that is when all the elderly will realize that the legislation was a tax increase—pure and simple. A new requirement on their 1040 tax form will say: "If you're over 65, take 15% of your tax and add it on."

At that precise time, our elderly will realize what physicians have known for years - the government has a way of making a promise and then reneging on it. What better example of this than Medicare. When the Medicare Program was passed in 1965, promises were made that were not kept—as all of you are so acutely aware. The entire program—its cost, its scapegoats, and its empty promises to physicians—reminds me of the Wizard of Oz when Dorothy and her cohorts returned to the Emerald City and asked the Wizard to live up to his promise. Just as the government has responded to physicians on so many occasions, the Great Oz replied, "What promise?"

But instead of directing their anger and frustrations at their legislators for what they will have perceived as a breach of promise, it will flow towards you and your colleagues—the most convenient receptacle available.

What I am leading up to is this: we must now, more than ever before, get out and talk to people. We must participate in every panel, forum, debate, and every other opportunity that presents itself to represent medicine. And we must create such opportunities because the criticisms and calls for more regulations will be unprecedented.

The public will continue to be told by interested third parties that the phenomenon of rising health care costs is your fault and that fraud and overuse of medical technology are running rampant—and are the norm. We must tell them about inflation, the new technology which has helped so many to live more productive lives, and the $26 billion of our health bill that went for administrative expenses. We must point out that approximately one quarter of the cost of Medicare is consumed by 5% of the beneficiaries in the last year of their lives. It must be noted that in a survey of intensive care patients at a university hospital that "seventy percent of them were 100 percent willing to undergo intensive care again to achieve even one more month of survival. Only eight percent were completely unwilling to undergo such care to achieve any prolongation of life."

That gibes with the Louis Harris poll which indicated that 91% of the respondents agreed that "every American should have the right to the best possible health care—just as good as the treatment a millionaire gets. People want the latest technique available, and when it's their life or that of a loved one, the cost is of no concern. Another Harris poll confirms that position wherein 71% of those polled opposed letting insurers set a financial limit on lifesaving medical treatments. But the real zinger is, of course, that the public wants more money spent on health care but does not want to pay more taxes to finance it.

As Robert Blake, author of *Rationing Medicine* puts it, "approximately 80 percent of illnesses are linked to individual behavior—smoking, alcohol, illicit drug use, poor diet, obesity, sexual promiscuity, and other high risk activities. Furthermore, "he says, four percent of the people in the United States account for 55 percent of all hospital costs."

With respect to life style and its impact on our health, my favorite statesman, Winston Churchill, put it characteristically well on a visit to his personal physician because of headaches, wheezing, aches, pains, and shortness of breath. "You've got to stop smoking a dozen cigars a day and staying up half the night drinking a bottle of cognac," his doctor admonished. "If I wanted to do that," Churchill shot back, "I wouldn't need you."

There are many other similar issues and comments to be made, but the point is that audiences are very receptive and sympathetic to such arguments. As you know, I try to get out and talk to groups as often as possible about health care matters—and I believe that it helps. Recently I addressed a group of senior citizens in Meriden which included a few legislators, and while not all agreed with me on everything—after all, I did discuss mandatory assignment—most of them came to understand the difficult dilemma of rising health care costs and the immense responsibility and burden thrust on you and your colleagues.

The time has come for us all to make a concerted effort to reach as many citizens in Connecticut as possible on these issues. Please discuss with your colleagues the need to speak to groups throughout the state. If you need help with a presentation, we at CSMS or your county medical association staff will be able to assist you. If you cannot do it yourself or find a colleague to handle it, I will do it or find a member of our staff to fill in. It can make a difference, and I think it is obvious that we must make the effort on every front.

All of medicine followed with keen interest the referendum decided in Florida last week which would have placed a $100,000 cap on the amount that could be awarded for pain and suffering damages in malpractice lawsuits. As you may or may not know, the referendum lost by a 57% to 43% majority. The trial lawyers poured in more than $8 million to defeat the measure while a medical coalition spent about $7 million. An old Italian proverb best sums up that situation: "a lawsuit is a fruit-tree planted in a lawyer's garden" and any threat to it will be defended to the death!

The story goes that a Russian, a Cuban, an American physician, and an American lawyer were traveling together on a train across Europe. The Russian took out a large bottle of vodka, poured each of his companions a drink and then hurled the semi-full bottle out the window. "Why did you do that?" asked the physician incredulously.

"Vodka is plentiful in my country," said the Russian. "In fact, we have more than we will ever use."

A little later, the Cuban passed around a box of fine Havana cigars. He then took the remaining cigars and threw them out the window. "I thought that the Cuban economy was suffering," the physician said. "Yet you threw away that perfectly good box of cigars."

"Cigars," the Cuban replied, "are a dime a dozen in Cuba. We have more of them than we know what to do with."

The physician appeared to be in deep thought for a moment, and then got up, grabbed the lawyer and threw him out the window.

Perhaps George Bernard Shaw put the entire liability problem best when, in referring to the public, he declared that "we have not lost faith, but we have transferred it from God to the medical profession." I'm sure that you would agree that while that might be flattering, the responsibility is simply too great.

We have heard the rumblings that the trial lawyers will make a major effort at tort deform in Connecticut next year, and there will be other significant attempted incursions into your practice which will guarantee us a full legislative plate. Your President, Norman Zlotsky, has approval from the Council—as you know—to determine once and for all the constitutionality of a cap on pain and suffering in this state. For too long legislators have simply said no to the idea—supporting their position by citing the alleged unconstitutionality of such a proposal.

So 1988 promises to be a busy and challenging year—perhaps our greatest test yet. This House of Delegates has supported society efforts in our successful efforts in the past and we thank you for that continuing show of faith.

Noting the time and our agenda, I don't wish to exceed your attention threshold. As Oscar Wilde once noted, "some cause happiness *wherever* they go, others *whenever* they go." Thank you.

COMMITTEE SERVICE QUESTIONNAIRE
Connecticut State Medical Society

Early in 1989 the Councilors from the eight constituent county medical associations assume the responsibility of selecting members of the Society to participate in the various activities of the Society listed below. In making these selections it is of importance to choose physicians who are not only willing and able to serve but also who are known to have an interest in the work of the group to which they may be assigned. In order to enable this office to furnish the Councilors with a compilation of those who desire to be considered for committee service, all members are asked to indicate by number in order of preference (not more than three) opposite your choice in the questionnaire below and return same to the:

Executive Director's Office
160 St. Ronan Street
New Haven, CT 06511

Your cooperation will be appreciated.

Medical Education

☐ Committee on Continuing Medical Education
☐ Committee on Program of the Scientific Assembly

Medical Economics

☐ Committee on Insurance

Professional Relations

☐ Committee on Ethical and Judicial Affairs

Public Affairs and Communications

☐ Editorial Committee on "Connecticut Medicine"
☐ Committee on Legislation
☐ Committee on Public Affairs

Scientific and Socio-Environmental Medicine

☐ Committee on Emergency Medical Services
☐ Cancer Coordinating Committee
☐ Committee on Physician Health
☐ Committee on Maternal Morbidity and Mortality
☐ Committee on Medical Aspects of Sports
☐ Committee on Mental Health
☐ Committee on Organ and Tissue Transfers
☐ Committee to Study Perinatal Morbidity and Mortality
☐ Committee on Public Health
☐ Committee on Statewide Medical Planning
☐ Committee on Geriatrics

Representatives and Advisors

☐ Committee on Allied Medical Services
☐ Committee on Hospitals
☐ Committee on Cooperation with the Medical Schools of Connecticut
☐ Liaison Committee with Connecticut Pharmaceutical Association
☐ Liaison Committee with State Department of Income Maintenance
☐ Representatives to Connecticut Advisory School Health Council
☐ Delegates to Connecticut Public Health Association, Inc.
☐ Delegates to Connecticut Nutrition Council

Please Return by January 20, 1989

Signed:______________________________M.D.
(Please Print)

Office Address:______________________________

____

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Membership Department
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New Haven, CT 06511

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a service to the medical profession in Connecticut. Opportunities for physicians to locate in Connecticut will be published as space permits and will be distributed to physicians making inquiries of such opportunities. Information should be sent to 160 St. Ronan St., New Haven, CT 06511 (203-865-0587).

Physicians wishing to establish practice in Connecticut are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

OPPORTUNITIES FOR PRACTICE

ALLERGY

Active Allergy Practice in large centrally located Connecticut city with large metropolitan population is available for sale. Also a small office building suitable for one or two doctors available on a sell or rent basis, within easy walking block to hospital or short drive to medical school. Reply to CSMS, AL/VG.

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Full or part-time position available in the Colchester Immediate Care Medical Center. Excellent salary, benefits, profit sharing, and part ownership options available. Please send C.V. to: Robert I. Moskowitz, M.D., 117 Stonemill Rd., Storrs, CT 06268 or call (203) 429-6109 (eves.).

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Physician wanted for small group practice in Danbury area. Family Practice and Internal Medicine. Send CV to CSMS, c/o FP/NP.

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Part-time physician needed for sexually transmitted diseases clinics and international travel clinics at the New Haven Health Department. Call the Medical Director at 787-8184, or send resume to: The New Haven Health Department, c/o Medical Director, One State St., New Haven, CT 06511.

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Internist. Board certified. To join three MD Internal Medicine Group in coastal Connecticut. To begin July, 1989. Send CV to: William Colom, M.D., 447 Montauk Ave., New London, CT 06320.

The Institute of Living (a 400-bed, private, not for profit, psychiatric hospital) is seeking a BC/BE internist subspecialist to join a growing medical program with clinical and teaching responsibilities. Research opportunities available. Contact Charles Boren, M.D., Medical Director, The Institute of Living, 400 Washington St., Hartford, CT 06106.

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PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

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Presently available. Age 61. Licensed in Connecticut. Nat'l bds. AB cert., (SURG). MD, Columbia University, New York, NY; Int. and Res., Hartford Hospital. Interested in institutional position involving primary care and/or utilization management. Prefers central Connecticut area. Occupational physician for 12 years with a major corporation. Write, Peyton H. Mead, M.D., 2 Mead Lane, Balbrae, Bloomfield, CT 06002.

INTERNAL MEDICINE

July '89. Age 35. Presently in practice. AB cert. MD, Boston University, Boston, MA; Int. and Res., Carney Hospital, Boston, MA. Prefers group type practice in a medium to large-sized community. Write, Eric C. Hatton, M.D., 800 Rosewood Dr., Clovis, NM 88101.

Cardiology. Sept. '88. Age 34. Licensed in Connecticut. Nat'l bds. AB elig. MD, Instituto Technologico de Santo Domingo, Dominican Republic; Res., Salvador B. Gautier Hospital, Santo Domingo; Fellowship, Metropolitan Hospital Center, NY Medical College, NY, NY. Prefers any type practice in a small to medium-sized community. Write, Sergio R. Collado, M.D., 301 Post Rd., East, Apt. 19, Westport, CT 06880.

Gastroenterology and Nutrition. July '89. Age 35. Nat'l bds. AB elig. D.O. College of Osteopathic Medicine and Surgery, Des Moines, IA; Int., Oakland General Osteopathic Hospital, Madison Heights, MI; Res., Henry Ford Hospital, Detroit, MI; Fellowship, Wayne State University, Detroit and Providence Hospital, Southfield, MI (Gast); University of California, Davis Medical Center, Sacramento (Nutr). Prefers group or associate type practice in a large-sized community. Write, Curtis Freedland, D.O., 25601 Briar Dr., Oak Park, MI 48237.

Hemotology/Oncology. Oct. '89. Age 31. Nat'l bds. AB cert. (IM); AB elig. (Hm/On). MD, Vanderbilt University, Nashville, TN; Int., Res., and Fellowship, Oklahoma University, Oklahoma City, OK. Prefers group, associate, institutional or solo type practice. Write, Richard J. Conklin, M.D., 244 Barrett Place, Edmond, OK 73034.

ORTHOPAEDIC SURGERY

July '89. Age 30. Nat'l bds. AB elig. MD, University of Connecticut, Farmington, CT; Int. and Res., Long Island Jewish Hospital, Long Island, NY; Fellowship, A.I. DuPont Institute. Prefers group type practice in a medium to large-sized community. Write, Mark A. Rieger, M.D., 3103 Acadia St., Wilmington, DE 19804.

PLASTIC SURGERY

July '89. Age 33. Nat'l bds. AB elig. Int., Res. and Fellowship, University of Pittsburgh, Pittsburgh, PA. Prefers group type practice in a medium to large-sized community. Write, Paul D. Fischer, M.D., 301 Woodbridge Dr., Pittsburgh, PA 15237.

PSYCHIATRY

June '89. Age 29. Licensed in Connecticut. Nat'l bds. AB elig. MD, New York Medical College, NY, NY; Int. and Res., Westchester County Medical Center, Valhalla, NY. No preference to type of size of practice. Write, Craig S. Rogers, M.D., Westchester County Medical Center, Box 14, Valhalla, NY 10595.

June '89. Age 58. Licensed in Connecticut. AB elig. MD, V. Chervenkov Academy of Medicine, Sofia, Bulgaria; Int., General Hospitals, Gabrovo and Pernik, Bulgaria; Res., Medical Academy, Sofia and Western Missouri Mental Health Center, Kansas City, MO. Prefers group, associate or institutional type practice in a large-sized community. Write, Zhivko Daskalov, M.D., 120 E. 37th St., Apt. #4, Kansas City, MO 64111.

RADIOLOGY

July '89. Age 34. Presently in practice. Nat'l bds. AB cert. MD, Mount Sinai School of Medicine, New York, NY; Int., Jackson Memorial Hospital, Miami, FL; Res., NYU Medical Center, New York, NY; Fellowship, Downstate Medical Center, Brooklyn, NY. Prefers group type practice in a large-sized community. Write, Ira Tyler, M.D., Apt. 6-A, 401 East 65th St., New York, NY 10021.

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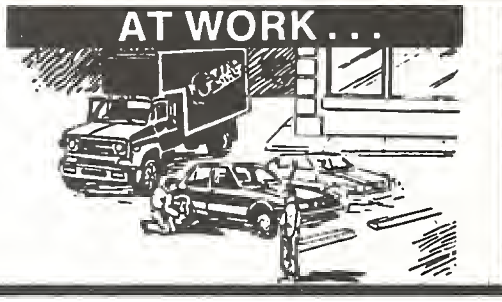

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